

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property
Organization
International Bureau



(43) International Publication Date
18 March 2004 (18.03.2004)

PCT

(10) International Publication Number
WO 2004/021978 A2

- (51) International Patent Classification⁷: **A61K**
- (21) International Application Number:
PCT/US2003/025833
- (22) International Filing Date: 19 August 2003 (19.08.2003)
- (25) Filing Language: English
- (26) Publication Language: English
- (30) Priority Data:
60/404,495 19 August 2002 (19.08.2002) US
- (71) Applicant (*for all designated States except US*): **PHARMACIA CORPORATION** [US/US]; Corporate Patent Department, P.O. Box 1027, St. Louis, MO 63006 (US).
- (72) Inventors; and
- (75) Inventors/Applicants (*for US only*): **WEINSTEIN, Edward, J.** [US/US]; 15449 Highcroft Drive, Chesterfield, MO 63017 (US). **GRIGGS, David, W.** [US/US]; 1237 Oak Borough Drive, Ballwin, MO 63021 (US).
- (74) Agents: **BAUER, Christopher, S.** et al.; Pharmacia Corporation, Corporate Patent Department, P.O. Box 1027, St. Louis, MO 63006 (US).
- (81) Designated States (*national*): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.
- (84) Designated States (*regional*): ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).
- Published:**
— *without international search report and to be republished upon receipt of that report*
- For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.*

(54) Title: ANTISENSE MODULATION OF ENDOTHELIAL SPECIFIC MOLECULE 1 EXPRESSION

(57) Abstract: Antisense compounds, compositions, and methods are provided for modulating the expression of Endothelial Specific Molecule-1 (ESM-1). The compositions comprise antisense compounds, particularly antisense oligonucleotides, targeted to nucleic acids encoding ESM-1. Methods of using these compounds for modulation of ESM-1 expression and for treatment of diseases associated with expression of ESM-1 are provided.

WO 2004/021978 A2

ANTISENSE MODULATION OF ENDOTHELIAL SPECIFIC
MOLECULE 1 EXPRESSION

The present application claims priority under Title 35, United States
5 Code, §119 to United States Provisional application Serial No.
60/404,495, filed August 19, 2002, which is incorporated by reference in
its entirety as if written herein.

FIELD OF THE INVENTION

10

[001] The present invention provides compositions and methods
for modulating the expression of Endothelial Specific Molecule-1
(ESM-1). In particular, this invention relates to antisense compounds,
particularly oligonucleotides, specifically hybridizable with nucleic
15 acids encoding Endothelial Specific Molecule-1. Such oligonucleotides
have been shown to modulate the expression of Endothelial Specific
Molecule-1.

BACKGROUND OF THE INVENTION

20

[002] Angiogenesis is the growth of new capillary blood vessels from pre-
existing vessels and capillaries and is crucial in a large number of processes,
such as wound repair, embryonic development, and the growth of solid tumors.
In neovascularization, endothelial cells will undergo migration, elongation,
25 proliferation, and orientation leading to lumen formation, re-establishment of a
basement membrane and eventual anastomosis with other vessels (Patan S. et
al., (2000), *J. Neurooncol.* 50: 1-15).

[003] Endothelial cell-specific molecule1 (ESM-1) was originally
isolated in an immunoscreening of a HUVEC cDNA library in order to
30 identify the gene encoding a 55-kDa autoantigen that may have a role in
asthma (Lassalle, P., et al.,). The full length ESM-1 cDNA was cloned
in a library constructed in pCDM8 but was found to be inserted in the
reverse orientation (Lassalle, P., et al.,).

[004] Northern blots have shown ESM-1 to probes to hybridize to RNA from HUVEC cells, SV40-transfected HUVECs, human lung, and human kidney. Little or none was detected in human heart, pancreas, placenta, muscle, 5 brain or liver (Lassalle et al., 1996). Antibodies raised to ESM-1 show protein expression in human lung, colon, and kidney (Bechard, D., et al., (2000). *J. Vasc. Res.* 37, 417-425; WO9945028). In the lung, ESM-1 is expressed in venules, arterioles, and alveolar capillaries as well as by epithelial cells of the bronchi and submucosal glands. In the kidney, expression is predominantly in 10 renal tubular epithelial cells. Capillaries and venules of the lamina propria of the colon also display ESM-1 expression. A splice variant of ESM-1 has been identified which lacks 150 base pairs but maintains the open reading frame (Aitkenhead, M., et al., (2002) *Microvasc. Res.* 63, 159-171).

15 [005] ESM-1 expression appears to be both constitutive and under the control of a variety of cytokines. HUVEC cells treated with TNF α or IL-1 β display an up-regulation of the gene. No change in ESM-1 levels was seen upon treatment with IL-4 or IFN γ . While coadministration of TNF α and IFN γ lead to a synergistic induction of proinflammatory factors such as IL-6, IL-8, 20 RANTES and ICAM-1, the combination of these two cytokines inhibit the TNF α induced ESM-1 up-regulation (Lassale et al., 1996).

[006] ESM-1 has been found to be differentially expressed in endothelial cells forming tubes in a 3-dimensional collagen gel when compared to cells 25 growing in two dimensions (Aitkenhead et al., 2002). Microarray analysis indicates a higher level of ESM-1 expression in HMVEC cells growing on collagen relative to those growing on osteopontin. We followed up on this observation by investigating the expression level of ESM-1 in colon tumor samples compared to a pool of normal colon tissue. Nine of ten tumors showed 30 expression at levels of threefold or higher at the RNA level, as determined by real-time quantitative reverse transcription polymerase chain reaction experiments.

[007] We have amplified ESM-1 from HDMECs and cloned it into an expression vector. A pool of transfected NIH3T3 cells were then selected and assayed for ESM-1 expression. After confirming significant gene over-
5 expression at the RNA level, cells were injected subcutaneously into a nu/nu female mouse. While vector transfected NIH3T3 fibroblasts failed to grow in these mice, those cells transfected with ESM-1 formed solid tumors within three weeks. This data shows that ESM-1 contains the potential to augment growth *in vivo* to a cell line that is usually not capable of forming tumors.

10

[008] Previous work on ESM-1 has found that levels of expression of this gene change in cells under varying conditions. We have extended those findings to show that ESM-1 is up regulated in colon carcinomas when compared to normal colon tissue. Additionally, we have shown that forced
15 over-expression of ESM-1 leads to an escalation of growth of NIH3T3 fibroblasts *in vivo*.

[009] Antisense technology is emerging as an effective means for reducing the expression of specific gene products and may therefore prove to be uniquely useful in a number of therapeutic, diagnostic, and
20 research applications for the modulation of ESM-1 expression.

SUMMARY OF THE INVENTION

[0010] The present invention is directed to antisense compounds,
25 particularly oligonucleotides, which are targeted to a nucleic acid encoding ESM-1, and which modulate the expression of ESM-1. Pharmaceutical and other compositions comprising the antisense compounds of the invention are also provided. Further provided are methods of modulating the expression of ESM-1 in cells or tissues
30 comprising contacting said cells or tissues with one or more of the antisense compounds or compositions of the invention. Further provided are methods of treating an animal, particularly a human, suspected of having or being prone to a disease or condition associated with

expression of ESM-1 by administering a therapeutically or prophylactically effective amount of one or more of the antisense compounds or compositions of the invention.

5 BRIEF DESCRIPTION OF THE FIGURES

[0011] Figure 1 shows the cDNA sequence and the ESM-1 protein sequence encoded therefrom.

10 [0012] Figure 2 shows the ESM-1 expression levels in ten tumors as determined by Real-Time Quantitative PCR.

DETAILED DESCRIPTION OF THE INVENTION

15 [0013] The present invention employs oligomeric antisense compounds, particularly oligonucleotides, for use in modulating the function of nucleic acid molecules encoding ESM-1, ultimately modulating the amount of ESM-1 produced. This is accomplished by providing antisense compounds, which specifically hybridize with one
20 or more nucleic acids encoding ESM-1. As used herein, the terms "target nucleic acid" and "nucleic acid encoding ESM-1" encompass DNA encoding ESM-1, RNA (including pre-mRNA and mRNA) transcribed from such DNA, and also cDNA derived from such RNA. The specific hybridization of an oligomeric compound with its target nucleic acid
25 interferes with the normal function of the nucleic acid. This modulation of function of a target nucleic acid by compounds, which specifically hybridize to it, is generally referred to as "antisense". The functions of DNA to be interfered with include replication and transcription. The functions of RNA to be interfered with include all vital functions such
30 as, for example, translocation of the RNA to the site of protein translation, translation of protein from the RNA, splicing of the RNA to yield one or more mRNA species, and catalytic activity which may be engaged in or facilitated by the RNA. The overall effect of such

interference with target nucleic acid function is modulation of the expression of ESM-1. In the context of the present invention, "modulation" means either an increase (stimulation) or a decrease (inhibition) in the expression of a gene. In the context of the present invention, inhibition is the preferred form of modulation, of gene expression and mRNA is a preferred target.

[0014] It is preferred to target specific nucleic acids for antisense. "Targeting" an antisense compound to a particular nucleic acid, in the context of this invention, is a multistep process. The process usually begins with the identification of a nucleic acid sequence whose function is to be modulated. This may be, for example, a cellular gene (or mRNA transcribed from the gene) whose expression is associated with a particular disorder or disease state, or a nucleic acid molecule from an infectious agent. In the present invention, the target is a nucleic acid molecule encoding ESM-1. The targeting process also includes determination of a site or sites within this gene for the antisense interaction to occur such that the desired effect, e.g., detection or modulation of expression of the protein, will result. Within the context of the present invention, a preferred intragenic site is the region encompassing the translation initiation or termination codon of the open reading frame (ORF) of the gene. Since, as is known in the art, the translation initiation codon is typically 5'-AUG (in transcribed mRNA molecules; 5'-ATG in the corresponding DNA molecule), the translation initiation codon is also referred to as the "AUG codon," the "start codon" or the "AUG start codon". A minority of genes have a translation initiation codon having the RNA sequence 5'-GUG, 5'-UUG or 5'-CUG, and 5'-AUA, 5'-ACG and 5'-CUG have been shown to function in vivo. Thus, the terms "translation initiation codon" and "start codon" can encompass many codon sequences, even though the initiator amino acid in each instance is typically methionine (in eukaryotes) or formylmethionine (in prokaryotes). It is also known in the art that eukaryotic and prokaryotic genes may have two or more alternative start codons, any one of which may be preferentially utilized for translation

initiation in a particular cell type or tissue, or under a particular set of conditions. In the context of the invention, "start codon" and "translation initiation codon" refer to the codon or codons that are used in vivo to initiate translation of an mRNA molecule transcribed from a gene
5 encoding ESM-1, regardless of the sequence(s) of such codons.

[0015] It is also known in the art that a translation termination codon (or "stop codon") of a gene may have one of three sequences, i.e. 5'-UAA, 5'-UAG and 5'-UGA (the corresponding DNA sequences are 5'-TAA, 5'-TAG and 5'-TGA, respectively). The terms "start codon
10 region" and "translation initiation codon region" refer to a portion of such an mRNA or gene that encompasses from about 25 to about 50 contiguous nucleotides in either direction (i.e., 5' or 3') from a translation initiation codon. Similarly, the terms "stop codon region" and "translation termination codon region" refer to a portion of such an
15 mRNA or gene that encompasses from about 25 to about 50 contiguous nucleotides in either direction (i.e., 5' or 3') from a translation termination codon.

[0016] The open reading frame (ORF) or "coding region," which is known in the art to refer to the region between the translation initiation
20 codon and the translation termination codon, is also a region which may be targeted effectively. Other target regions include the 5' untranslated region (5'UTR), known in the art to refer to the portion of an mRNA in the 5' direction from the translation initiation codon, and thus including nucleotides between the 5' cap site and the translation initiation codon
25 of an mRNA or corresponding nucleotides on the gene, and the 3' untranslated region (3'UTR), known in the art to refer to the portion of an mRNA in the 3' direction from the translation termination codon, and thus including nucleotides between the translation termination codon and 3' end of an mRNA or corresponding nucleotides on the gene. The
30 5' cap of an mRNA comprises an N7-methylated guanosine residue joined to the 5'-most residue of the mRNA via a 5'-5' triphosphate linkage. The 5' cap region of an mRNA is considered to include the 5'

cap structure itself as well as the first 50 nucleotides adjacent to the cap.

The 5' cap region may also be a preferred target region.

[0017] Although some eukaryotic mRNA transcripts are directly translated, many contain one or more regions, known as "introns," which are excised from a transcript before it is translated. The remaining (and therefore translated) regions are known as "exons" and are spliced together to form a continuous mRNA sequence. mRNA splice sites, i.e., intron-exon junctions, may also be preferred target regions, and are particularly useful in situations where aberrant splicing is implicated in disease, or where an overproduction of a particular mRNA splice product is implicated in disease. Aberrant fusion junctions due to rearrangements or deletions are also preferred targets. It has also been found that introns can also be effective, and therefore preferred, target regions for antisense compounds targeted, for example, to DNA or pre-mRNA.

[0018] Once one or more target sites have been identified, oligonucleotides are chosen which are sufficiently complementary to the target, i.e., hybridize sufficiently well and with sufficient specificity, to give the desired effect.

[0019] In the context of this invention, "hybridization" means hydrogen bonding, which may be Watson-Crick, Hoogsteen, or reversed Hoogsteen hydrogen bonding, between complementary nucleoside or nucleotide bases. For example, adenine and thymine are complementary nucleobases, which pair through the formation of hydrogen bonds. "Complementary," as used herein, refers to the capacity for precise pairing between two nucleotides. For example, if a nucleotide at a certain position of an oligonucleotide is capable of hydrogen bonding with a nucleotide at the same position of a DNA or RNA molecule, then the oligonucleotide and the DNA or RNA are considered to be complementary to each other at that position. The oligonucleotide and the DNA or RNA are complementary to each other when a sufficient number of corresponding positions in each molecule are occupied by nucleotides which can hydrogen bond with each other. Thus,

"specifically hybridizable" and "complementary" are terms which are used to indicate a sufficient degree of complementarity or precise pairing such that stable and specific binding occurs between the oligonucleotide and the DNA or RNA target. It is understood in the art
5 that the sequence of an antisense compound need not be 100% complementary to that of its target nucleic acid to be specifically hybridizable. An antisense compound is specifically hybridizable when binding of the compound to the target DNA or RNA molecule interferes with the normal function of the target DNA or RNA to cause a loss of
10 utility, and there is a sufficient degree of complementarity to avoid non-specific binding of the antisense compound to non-target sequences under conditions in which specific binding is desired, i.e., under physiological conditions in the case of in vivo assays or therapeutic treatment, and in the case of in vitro assays, under conditions in which
15 the assays are performed.

[0020] Antisense compounds are commonly used as research reagents and diagnostics. For example, antisense oligonucleotides, which are able to inhibit gene expression with exquisite specificity, are often used by those of ordinary skill to elucidate the function of
20 particular genes. Antisense compounds are also used, for example, to distinguish between functions of various members of a biological pathway. Antisense modulation has, therefore, been harnessed for research use.

[0021] The specificity and sensitivity of antisense is also harnessed
25 by those of skill in the art for therapeutic uses. Antisense oligonucleotides have been employed as therapeutic moieties in the treatment of disease states in animals and man. Antisense oligonucleotides have been safely and effectively administered to humans and numerous clinical trials are presently underway. It is thus
30 established that oligonucleotides can be useful therapeutic modalities that can be configured to be useful in treatment regimes for treatment of cells, tissues and animals, especially humans. In the context of this invention, the term "oligonucleotide" refers to an oligomer or polymer

of ribonucleic acid (RNA) or deoxyribonucleic acid (DNA) or mimetics thereof. This term includes oligonucleotides composed of naturally occurring nucleobases, sugars and covalent internucleoside (backbone) linkages as well as oligonucleotides having non-naturally occurring portions which function similarly. Such modified or substituted oligonucleotides are often preferred over native forms because of desirable properties such as, for example, enhanced cellular uptake, enhanced affinity for nucleic acid target and increased stability in the presence of nucleases.

- 10 [0022] ESM-1 antisense oligonucleotides that have activity in the cardiovascular, angiogenic, and endothelial assays described herein, and/or whose gene product has been found to be localized to the cardiovascular system, is likely to have therapeutic uses in a variety of cardiovascular, endothelial, and angiogenic disorders, including systemic disorders that affect vessels, such as diabetes mellitus. Its therapeutic utility could include diseases of the arteries, capillaries, veins, and/or lymphatics. Examples of treatments hereunder include treating muscle wasting disease, treating osteoporosis, aiding in implant fixation to stimulate the growth of cells around the implant and therefore facilitate its attachment to its intended site, increasing IGF stability in tissues or in serum, if applicable, and increasing binding to the IGF receptor (since IGF has been shown in vitro to enhance human marrow erythroid and granulocytic progenitor cell growth).

- 25 [0023] ESM-1 antisense oligonucleotides can be used to inhibit the production of excess connective tissue during wound healing or pulmonary fibrosis if ESM-1 promotes such production. This would include treatment of acute myocardial infarction and heart failure.

[0024] Moreover, the present invention provides the treatment of cardiac hypertrophy, regardless of the underlying cause, by administering a therapeutically effective dose of ESM-1 antisense oligonucleotides.

- 30 [0025] The treatment for cardiac hypertrophy can be performed at any of its various stages, which may result from a variety of diverse pathologic conditions, including myocardial infarction, hypertension, hypertrophic cardiomyopathy, and valvular regurgitation. The treatment extends to all stages

of the progression of cardiac hypertrophy, with or without structural damage of the heart muscle, regardless of the underlying cardiac disorder.

[0026] ESM-1 antisense oligonucleotides would be useful for treatment of disorders where it is desired to limit or prevent angiogenesis. Examples of such disorders include vascular tumors such as hemangioma, tumor angiogenesis, neovascularization in the retina, choroid, or cornea, associated with diabetic retinopathy or premature infant retinopathy or macular degeneration and proliferative vitreoretinopathy, rheumatoid arthritis, Crohn's disease, atherosclerosis, ovarian hyperstimulation, psoriasis, endometriosis associated with neovascularization, restenosis subsequent to balloon angioplasty, scar tissue overproduction, for example, that seen in a keloid that forms after surgery, fibrosis after myocardial infarction, or fibrotic lesions associated with pulmonary fibrosis.

[0027] Specific types of diseases are described below, where ESM-1 antisense oligonucleotides may serve as useful for vascular-related drug targeting or as therapeutic targets for the treatment or prevention of the disorders.

[0028] Atherosclerosis is a disease characterized by accumulation of plaques of intimal thickening in arteries, due to accumulation of lipids, proliferation of smooth muscle cells, and formation of fibrous tissue within the arterial wall. The disease can affect large, medium, and small arteries in any organ. Changes in endothelial and vascular smooth muscle cell function are known to play an important role in modulating the accumulation and regression of these plaques.

[0029] Hypertension is characterized by raised vascular pressure in the systemic arterial, pulmonary arterial, or portal venous systems. Elevated pressure may result from or result in impaired endothelial function and/or vascular disease.

[0030] Inflammatory vasculitides include giant cell arteritis, Takayasu's arteritis, polyarteritis nodosa (including the microangiopathic form), Kawasaki's disease, microscopic polyarteritis, Wegener's granulomatosis, and a variety of infectious-related vascular disorders (including Henoch-Schonlein Purpura). Altered endothelial cell function has been shown to be important in these

diseases. Reynaud's disease and Reynaud's phenomenon are characterized by intermittent abnormal impairment of the circulation through the extremities on exposure to cold. Altered endothelial cell function has been shown to be important in this disease.

- 5 **[0031]** Aneurysms are saccular or fusiform dilatations of the arterial or venous tree that are associated with altered endothelial cell and/or vascular smooth muscle cells.

- [0032]** Arterial restenosis (restenosis of the arterial wall) may occur following angioplasty as a result of alteration in the function and proliferation of
10 endothelial and vascular smooth muscle cells.

[0033] Thrombophlebitis and lymphangitis are inflammatory disorders of veins and lymphatics, respectively, that may result from, and/or in, altered endothelial cell function. Similarly, lymphedema is a condition involving impaired lymphatic vessels resulting from endothelial cell function.

- 15 **[0034]** The family of benign and malignant vascular tumors is characterized by abnormal proliferation and growth of cellular elements of the vascular system. For example, lymphangiomas are benign tumors of the lymphatic system that are congenital, often cystic, malformations of the lymphatics that usually occur in newborns.

- 20 **[0035]** Cystic tumors tend to grow into the adjacent tissue. Cystic tumors usually occur in the cervical and axillary region. They can also occur in the soft tissue of the extremities. The main symptoms are dilated, sometimes reticular, structured lymphatics and lymphocysts surrounded by connective tissue.

- [0036]** Lymphangiomas are assumed to be caused by improperly connected
25 embryonic lymphatics or their deficiency. The result is impaired local lymph drainage.

- [0037]** Another use for ESM-1 antisense antagonists is in the prevention of tumor angiogenesis, which involves vascularization of a tumor to enable it to growth and/or metastasize. This process is dependent on the growth of new
30 blood vessels. Examples of neoplasms and related conditions that involve tumor angiogenesis include breast carcinomas, lung carcinomas, gastric carcinomas, esophageal carcinomas, colorectal carcinomas, liver carcinomas, ovarian carcinomas, thecomas, arrhenoblastomas, cervical carcinomas, endometrial

- carcinoma, endometrial hyperplasia, endometriosis, fibrosarcomas, choriocarcinoma, head and neck cancer, nasopharyngeal carcinoma, laryngeal carcinomas, hepatoblastoma, Kaposi's sarcoma, melanoma, skin carcinomas, hemangioma, cavernous hemangioma, hemangioblastoma, pancreas
- 5 carcinomas, retinoblastoma, astrocytoma, glioblastoma, Schwannoma, oligodendroglioma, medulloblastoma, neuroblastomas, rhabdomyosarcoma, osteogenic sarcoma, leiomyosarcomas, urinary tract carcinomas, thyroid carcinomas, Wilm's tumor, renal cell carcinoma, prostate carcinoma, abnormal vascular proliferation associated with phakomatoses, edema (such as that
- 10 associated with brain tumors), and Meigs' syndrome.
- [0038] Healing of trauma such as wound healing and tissue repair is also a targeted use for ESM-1 antisense oligonucleotides. Formation and regression of new blood vessels is essential for tissue healing and repair. This category includes bone, cartilage, tendon, ligament, and/or nerve tissue growth or
- 15 regeneration, as well as wound healing and tissue repair and replacement, and in the treatment of burns, incisions, and ulcers.
- [0039] ESM-1 antisense oligonucleotides that induce cartilage and/or bone growth in circumstances where bone is not normally formed have application in the healing of bone fractures and cartilage damage or defects in humans and
- 20 other animals. Such a preparation employing ESM-1 antisense oligonucleotides may have prophylactic use in closed as well as open fracture reduction and also in the improved fixation of artificial joints. De novo bone formation induced by an osteogenic agent contributes to the repair of congenital, trauma induced, or oncologic, resection-induced craniofacial defects, and also is useful in cosmetic
- 25 plastic surgery.
- [0040] It is expected that ESM-1 antisense oligonucleotides may also exhibit activity for generation or regeneration of other tissues, such as organs (including, for example, pancreas, liver, intestine, kidney, skin, or endothelium), muscle (smooth, skeletal, or cardiac), and vascular (including vascular
- 30 endothelium) tissue, or for promoting the growth of cells comprising such tissues. Part of the desired effects may be by inhibition or modulation of fibrotic scarring to allow normal tissue to regenerate.

[0041] ESM-1 antisense oligonucleotides may also be useful for gut protection or regeneration and treatment of lung or liver fibrosis, reperfusion injury in various tissues, and conditions resulting from systemic cytokine damage. Also, ESM-1 antisense oligonucleotides may be useful for promoting or inhibiting differentiation of tissues described above from precursor tissues or cells, or for inhibiting the growth of tissues described above.

[0042] ESM-1 antisense oligonucleotides may also be used in the treatment of periodontal diseases and in other tooth-repair processes. Such agents may provide an environment to attract bone-forming cells, stimulate growth of bone-forming cells, or induce differentiation of progenitors of bone-forming cells. ESM-1 antisense oligonucleotides may also be useful in the treatment of osteoporosis or osteoarthritis, such as through stimulation of bone and/or cartilage repair or by blocking inflammation or processes of tissue destruction (collagenase activity, osteoclast activity, etc.) mediated by inflammatory processes, since blood vessels play an important role in the regulation of bone turnover and growth.

[0043] Another category of tissue regeneration activity that may be attributable to ESM-1 antisense oligonucleotides is tendon/ligament formation. A protein that induces tendon/ligament-like tissue or other tissue formation in circumstances where such tissue is not normally formed has application in the healing of tendon or ligament tears, deformities, and other tendon or ligament defects in humans and other animals. Such a preparation may have prophylactic use in preventing damage to tendon or ligament tissue, as well as use in the improved fixation of tendon or ligament to bone or other tissues, and in repairing defects to tendon or ligament tissue. De novo tendon/ligament-like tissue formation induced by a composition of ESM-1 antisense oligonucleotides contributes to the repair of congenital, trauma-induced, or other tendon or ligament defects of other origin, and is also useful in cosmetic plastic surgery for attachment or repair of tendons or ligaments. The compositions herein may provide an environment to attract tendon- or ligament-forming cells, stimulate growth of tendon- or ligament-forming cells, induce differentiation of progenitors of tendon- or ligament forming cells, or induce growth of tendon/ligament cells or progenitors ex vivo for return in vivo to effect tissue

repair. The compositions herein may also be useful in the treatment of tendinitis, carpal tunnel syndrome, and other tendon or ligament defects. The compositions may also include an appropriate matrix and/or sequestering agent as a carrier as is well known in the art.

5 [0044] ESM-1 antisense oligonucleotides may also be administered prophylactically to patients with cardiac hypertrophy, to prevent the progression of the condition, and avoid sudden death, including death of asymptomatic patients. Such preventative therapy is particularly warranted in the case of patients diagnosed with massive left ventricular cardiac hypertrophy (a maximal
10 wall thickness of 35 mm. or more in adults, or a comparable value in children), or in instances when the hemodynamic burden on the heart is particularly strong.

[0045] ESM-1 antisense oligonucleotides may also be useful in the management of atrial fibrillation, which develops in a substantial portion of
15 patients diagnosed with hypertrophic cardiomyopathy. Further indications include angina, myocardial infarctions such as acute myocardial infarctions, and heart failure such as congestive heart failure. Additional non-neoplastic conditions include psoriasis, diabetic and other proliferative retinopathies including retinopathy of prematurity, retrolental fibroplasia, neovascular
20 glaucoma, thyroid hyperplasias (including Grave's disease), corneal and other tissue transplantation, chronic inflammation, lung inflammation, nephrotic syndrome, preeclampsia, ascites, pericardial effusion (such as that associated with pericarditis), and pleural effusion.

[0046] In view of the above, ESM-1 antisense oligonucleotides,
25 which are shown to alter or impact endothelial cell function, proliferation, and/or form, are likely to play an important role in the etiology and pathogenesis of many or all of the disorders noted above, and as such can serve as therapeutic targets to augment or inhibit these processes or for vascular-related drug targeting in these disorders.

30

Combination Therapies

[0047] The effectiveness of ESM-1 antisense oligonucleotides in preventing or treating the disorder in question may be improved by administering the active agent serially or in combination with another agent that is effective for those purposes, either in the same composition or as separate compositions. For example, for treatment of cardiac hypertrophy, ESM-1 antisense therapy can be combined with the administration of inhibitors of known cardiac myocyte hypertrophy factors, e.g., inhibitors of α_1 -adrenergic agonists such as phenylephrine; endothelin-1 inhibitors such as BOSENTANTM and MOXONODINTM; inhibitors to CT-1 (US Pat. No. 5,679,545); inhibitors to LIF; ACE inhibitors; des- aspartate-angiotensin I inhibitors (U.S. Pat. No. 5,773,415), and angiotensin II inhibitors.

[0048] For treatment of cardiac hypertrophy associated with hypertension, ESM-1 antisense oligonucleotides can be administered in combination with P-adrenergic receptor blocking agents, e.g., propranolol, timolol, tertalolol, carteolol, nadolol, betaxolol, penbutolol, acetobutolol, atenolol, metoprolol, or carvedilol; ACE inhibitors, e.g., quinapril, captopril, enalapril, ramipril, benazepril, fosinopril, or lisinopril; diuretics, e.g., chlorothiazide, hydrochlorothiazide, hydroflumethiazide, methylchlothiazide, benzthiazide, dichlorphenamide, acetazolamide, or indapamide; and/or calcium channel blockers, e.g., diltiazem, nifedipine, verapamil, or nicardipine. Pharmaceutical compositions comprising the therapeutic agents identified herein by their generic names are commercially available, and are to be administered following the manufacturers' instructions for dosage, administration, adverse effects, contraindications, etc. 119 See, e.g., *Physicians' Desk Reference* (Medical Economics Data Production Co.: Montvale, N.J., 1997), 51 st Edition. Preferred candidates for combination therapy in the treatment of hypertrophic cardiomyopathy are P-adrenergic-blocking drugs (e.g., propranolol, timolol, tertalolol, carteolol, nadolol, betaxolol, penbutolol, acetobutolol, atenolol, metoprolol, or carvedilol), verapamil, diltiazem, or nifedipine. Treatment of hypertrophy associated with high blood pressure may require the use of antihypertensive drug therapy, using calcium channel blockers, e.g., diltiazem, nifedipine, verapamil, or nicardipine; P-adrenergic blocking agents; diuretics, e.g., chlorothiazide, hydrochlorothiazide, hydroflumethiazide,

methylochlothiazide, benzthiazide, dichlorphenamide, acetazolamide, or indapamide; and/or ACE-inhibitors, e. g., quinapril, captopril, enalapril, ramipril, benazepril, fosinopril, or lisinopril.

[0049] For other indications, ESM-1 antisense oligonucleotides may be
5 combined with other agents beneficial to the treatment of the bone and/or cartilage defect, wound, or tissue in question. These agents include various growth factors such as EGF, PDGF, TGF- or TGF-, IGF, FGF, and CTGF.

[0050] In addition, ESM-1 antisense oligonucleotides used to treat cancer
10 may be combined with cytotoxic, chemotherapeutic, or growth-inhibitory agents as identified above. Also, for cancer treatment, ESM-1 antisense oligonucleotides are suitably administered serially or in combination with radiological treatments, whether involving irradiation or administration of radioactive substances.

[0051] The effective amounts of the therapeutic agents administered in
15 combination with ESM-1 antisense oligonucleotides thereof will be at the physician's, or veterinarian's discretion. Dosage administration and adjustment is done to achieve maximal management of the conditions to be treated. For example, for treating hypertension, these amounts ideally take into account use of diuretics or digitalis, and conditions such as hyper- or hypotension, renal
20 impairment, etc. The dose will additionally depend on such factors as the type of the therapeutic agent to be used and the specific patient being treated. Typically, the amount employed will be the same dose as that used, if the given therapeutic agent is administered without ESM-1 antisense oligonucleotides.

[0052] For treatment of breast carcinoma, ESM-1 antisense oligonucleotides
25 can be administered in combination with, but not limited to, Trastuzumab (Herceptin) with chemotherapy, paclitaxel, docetaxel, epirubicin, mitoxantrone, topotecan, capecitabine, vinorelbine, thiotepa, vincristine, vinblastine, carboplatin or cisplatin, plicamycin, anastrozole, letrozole, exemestane, toremifene, or progestins.

[0053] For treatment of acute lymphocytic leukemia, ESM-1 antisense
30 oligonucleotides can be administered in combination with, but not limited to, doxorubicin, cytarabine, cyclophosphamide, etoposide, teniposide, allopurinol, or autologous bone marrow transplantation.

[0054] For treatment of acute myelocytic and myelomonocytic leukemia, ESM-1, antisense oligonucleotides can be administered in combination with, but not limited to, gemtuzumab ozogamicin (Mylotarg), mitoxantrone,
5 idarubicin, etoposide, mercaptopurine, thioguanine, azacitidine, amsacrine, methotrexate, doxorubicin, tretinoin, allopurinol, leukapheresis, prednisone, or arsenic trioxide for acute promyelocytic leukemia.

[0055] For treatment of chronic myelocytic leukemia, ESM-1 antisense oligonucleotides can be administered in combination with, but not limited to,
10 busulfan, mercaptopurine, thioguanine, cytarabine, plicamycin, melphalan, autologous bone marrow transplantation, or allopurinol.

[0056] For treatment of chronic lymphocytic leukemia, ESM-1 antisense oligonucleotides can be administered in combination with, but not limited to, vincristine, cyclophosphamide, doxorubicin, cladribine (2-
15 chlorodeoxyadenosine; CdA), allogeneic bone marrow transplant, androgens, or allopurinol.

[0057] For treatment of multiple myeloma, ESM-1 antisense oligonucleotides can be administered in combination with, but not limited to, etoposide, cytarabine, alpha interferon, dexamethasone, or autologous bone
20 marrow transplantation.

[0058] For treatment of carcinoma of the lung (small cell and non-small cell), ESM-1 antisense oligonucleotides can be administered in combination with, but not limited to, cyclophosphamide, doxorubicin, vincristine, etoposide, mitomycin, ifosfamide, paclitaxel, irinotecan, or radiation therapy.

25 [0059] For treatment of carcinoma of the colon and rectum, ESM-1 antisense oligonucleotides can be administered in combination with, but not limited to, capecitabine, methotrexate, mitomycin, carmustine, cisplatin, irinotecan, or floxuridine.

[0060] For treatment of carcinoma of the kidney, ESM-1 antisense
30 oligonucleotides can be administered in combination with, but not limited to, alpha interferon, progestins, infusional FUDR, or fluorouracil.

[0061] For treatment of carcinoma of the prostate, ESM-1 antisense oligonucleotides can be administered in combination with, but not limited to,

ketoconazole, doxorubicin, aminoglutethimide, progestins, cyclophosphamide, cisplatin, vinblastine, etoposide, suramin, PC-SPES, or estramustine phosphate.

[0062] For treatment of melanoma, ESM-1 antisense oligonucleotides can be administered in combination with, but not limited to, carmustine, lomustine, melphalan, thiotepa, cisplatin, paclitaxel, tamoxifen, or vincristine.

[0063] For treatment of carcinoma of the ovary, ESM-1 antisense oligonucleotides can be administered in combination with, but not limited to, docetaxel, doxorubicin, topotecan, cyclophosphamide, doxorubicin, etoposide, or liposomal doxorubicin.

10 [0064] While antisense oligonucleotides are a preferred form of antisense compound, the present invention comprehends other oligomeric antisense compounds, including but not limited to oligonucleotide mimetics such as are described below. The antisense compounds in accordance with this invention preferably comprise from
15 about 8 to about 30 nucleobases (i.e. from about 8 to about 30 linked nucleosides). Particularly preferred antisense compounds are antisense oligonucleotides, even more preferably those comprising from about 12 to about 25 nucleobases. As is known in the art, a nucleoside is a base-sugar combination. The base portion of the nucleoside is normally a
20 heterocyclic base. The two most common classes of such heterocyclic bases are the purines and the pyrimidines. Nucleotides are nucleosides that further include a phosphate group covalently linked to the sugar portion of the nucleoside. For those nucleosides that include a
25 pentofuranosyl sugar, the phosphate group can be linked to either the 2', 3' or 5' hydroxyl moiety of the sugar. In forming oligonucleotides, the phosphate groups covalently link adjacent nucleosides to one another to form a linear polymeric compound. In turn the respective ends of this linear polymeric structure can be further joined to form a circular structure, however, open linear structures are generally preferred. Within
30 the oligonucleotide structure, the phosphate groups are commonly referred to as forming the internucleoside backbone of the oligonucleotide. The normal I linkage or backbone of RNA and DNA is a 3' to 5' phosphodiester linkage.

- [0065] Specific examples of preferred antisense compounds useful in this invention include oligonucleotides containing modified backbones or non-natural internucleoside linkages. As defined in this specification, oligonucleotides having modified backbones include those that retain a phosphorus atom in the backbone and those that do not have a phosphorus atom in the backbone. For the purposes of this specification, and as sometimes referenced in the art, modified oligonucleotides that do not have a phosphorus atom in their internucleoside backbone can also be considered to be oligonucleosides.
- 10 [0066] Preferred modified oligonucleotide backbones include, for example, phosphorothioates, chiral phosphorothioates, phosphorodithioates, phosphotriesters, aminoalkylphosphotriesters, methyl and other alkyl phosphonates including 3'-alkylene phosphonates and chiral phosphonates, phosphinates, phosphoramidates including 3'-
- 15 amino phosphoramidate and aminoalkylphosphoramidates, thionophosphoramidates, thionoalkylphosphonates, thionoalkylphosphotriesters, and boranophosphates having normal 3'-5' linkages, 2'-5' linked analogs of these, and those having inverted polarity wherein the adjacent pairs of nucleoside units are linked 3'-5' to
- 20 5'-3' or 2'-5' to 5'-2'. Various salts, mixed salts and free acid forms are also included.
- [0067] Representative United States patents that teach the preparation of the above phosphorus-containing linkages include, but are not limited to, U.S.: 3,687,808; 4,469,863; 4,476,301; 5,023,243;
- 25 5,177,196; 5,188,897; 5,264,423; 5,276,019; 5,278,302; 5,286,717; 5,321,131; 5,399,676; 5,405,939; 5,453,496; 5,455,233; 5,466,677; 5,476,925; 5,519,126; 5,536,821; 5,541,306; 5,550,111; 5,563,253; 5,571,799; 5,587,361; and 5,625,050, each of which is herein incorporated by reference.
- 30 [0068] Preferred modified oligonucleotide backbones that do not include a phosphorus atom therein have backbones that are formed by short chain alkyl or cycloalkyl internucleoside linkages, mixed heteroatom and alkyl or cycloalkyl internucleoside linkages, or one or

more short chain heteroatomic or heterocyclic internucleoside linkages.

These include those having morpholino linkages (formed in part from the sugar portion of a nucleoside); siloxane backbones; sulfide, sulfoxide and sulfone backbones; formacetyl and thioformacetyl backbones;

- 5 methylene formacetyl and thioformacetyl backbones; alkene containing backbones; sulfamate backbones; methyleneimino and methylenehydrazino backbones; sulfonate and sulfonamide backbones; amide backbones; and others having mixed N, O, S and CH₂ component parts.

- 10 [0069] Representative United States patents that teach the preparation of the above oligonucleosides include, but are not limited to, U.S. 5,034,506; 5,166,315; 5,185,444; 5,214,134; 5,216,141; 5,235,033; 5,264,562; 5,264,564; 5,405,938; 5,434,257; 5,466,677; 5,470,967; 5,489,677; 5,541,307; 5,561,225; 5,596,086; 5,602,240; 5,610,289;
15 5,602,240; 5,608,046; 5,610,289; 5,618,704; 5,623,070; 5,663,312; 5,633,360; 5,677,437; and 5,677,439, each of which is herein incorporated by reference.

- [0070] In other preferred oligonucleotide mimetics, both the sugar and the internucleoside linkage, i.e., the backbone, of the nucleotide
20 units are replaced with novel groups. The base units are maintained for hybridization with an appropriate nucleic acid target compound. One such oligomeric compound, an oligonucleotide mimetic that has been shown to have excellent hybridization properties, is referred to as a peptide nucleic acid (PNA). In PNA compounds, the sugar-backbone of
25 an oligonucleotide is replaced with an amide containing backbone, in particular an aminoethylglycine backbone. The nucleobases are retained and are bound directly or indirectly to aza nitrogen atoms of the amide portion of the backbone. Representative United States patents that teach the preparation of PNA compounds include, but are not limited to, U.S.
30 5,539,082; 5,714,331; and 5,719,262, each of which is herein incorporated by reference. Further teaching of PNA compounds can be found in Nielsen et al., *Science*, 1991, 254, 1497-1500.

[0071] Most preferred embodiments of the invention are oligonucleotides with phosphorothioate backbones and oligonucleosides with heteroatom backbones, and in particular $-\text{CH}_2\text{-NH-O-CH}_2-$, $-\text{CH}_2\text{-N}(\text{CH}_3)\text{-O-CH}_2-$ [known as a methylene (methylimino) or MMI backbone], $-\text{CH}_2\text{-O-N}(\text{CH}_3)\text{-CH}_2-$, $-\text{CH}_2\text{N}(\text{CH}_3)\text{-N}(\text{CH}_3)\text{-CH}_2-$ and $-\text{O-N}(\text{CH}_3)\text{-CH}_2\text{-CH}_2-$ [wherein the native phosphodiester backbone is represented as $-\text{O-P-O-CH}_2-$] of the above referenced U.S. patent 5,489,677, and the amide backbones of the above referenced U.S. patent 5,602,240. Also preferred are oligonucleotides having morpholino backbone structures of the above-referenced U.S. patent 5,034,506.

[0072] Modified oligonucleotides may also contain one or more substituted sugar moieties. Preferred oligonucleotides comprise one of the following at the 2' position: OH; F; O-, S-, or N-alkyl; O-, S-, or N-alkenyl; O-, S- or N-alkynyl; or O-alkyl-O-alkyl, wherein the alkyl, alkenyl and alkynyl may be substituted or unsubstituted C_1 to C_{10} alkyl or C_2 to C_{10} alkenyl and alkynyl. Particularly preferred are $\text{O}[(\text{CH}_2)_n\text{O}]_m\text{CH}_3$, $\text{O}(\text{CH}_2)_n\text{OCH}_3$, $\text{O}(\text{CH}_2)_n\text{NH}_2$, $\text{O}(\text{CH}_2)_n\text{CH}_3$, $\text{O}(\text{CH}_2)_n\text{ONH}_2$, and $\text{O}(\text{CH}_2)_n\text{ON}[(\text{CH}_2)_n\text{CH}_3]_2$ where n and m are from 1 to about 10. Other preferred oligonucleotides comprise one of the following at the 2' position: C_1 to C_{10} , (lower alkyl, substituted lower alkyl, alkaryl, aralkyl, O-alkaryl or O-aralkyl, SH, SCH_3 , OCN, Cl, Br, CN, CF_3 , OCF_3 , SOCH_3 , SO_2CH_3 , ONO_2 , NO_2 , N_3 , NH_2 , heterocycloalkyl, heterocycloalkaryl, aminoalkylamino, polyalkylamino, substituted silyl, an RNA cleaving group, a reporter group, an intercalator, a group for improving the pharmacokinetic properties of an oligonucleotide, or a group for improving the pharmacodynamic properties of an oligonucleotide, and other substituents having similar properties. A preferred modification includes 2' -methoxyethoxy ($2'\text{-O-CH}_2\text{CH}_2\text{OCH}_3$, also known as 2'-O-(2-methoxyethyl) or 2'-MOE) (Martin et al., *Helv. Chim. Acta*, 1995, 78, 486-504) i.e., an alkoxyalkoxy group. A further preferred modification includes 2'-dimethylaminoethoxy, i.e., a $\text{O}(\text{CH}_2)_2\text{ON}(\text{CH}_3)_2$ group, also known as 2'-DMAOE, as described in examples herein below, and

2'-dimethylaminoethoxyethoxy (also known in the art as 2'-O-dimethylaminoethoxyethyl or 2'-DMAEOE), i.e., 2'-O-CH₂-O-CH₂-N(CH₂)₂, also described in examples herein below.

[0073] Other preferred modifications include 2'-methoxy (2'-O-CH₃), 2'-aminopropoxy (2'-O CH₂ CH₂ CH₂NH₂) and 2'-fluoro (2'-F). Similar modifications may also be made at other positions on the oligonucleotide, particularly the 3' position of the sugar on the 3' terminal nucleotide or in 2'-5' linked oligonucleotides and the 5' position of 5' terminal nucleotide. Oligonucleotides may also have sugar mimetics such as cyclobutyl moieties in place of the pentofuranosyl sugar. Representative United States patents that teach the preparation of such modified sugar structures include, but are not limited to, U.S. 4,981,957; 5,118,800; 5,319,080; 5,359,044; 5,393,878; 5,446,137; 5,466,786; 5,514,785; 5,519,134; 5,567,811; 5,576,427; 5,591,722; 5,597,909; 5,610,300; 5,627,053; 5,639,873; 5,646,265; 5,658,873; 5,670,633; and 5,700,920, each of which is herein incorporated by reference in its entirety.

[0074] Oligonucleotides may also include nucleobase (often referred to in the art simply as "base") modifications or substitutions. As used herein, "unmodified" or "natural" nucleobases include the purine bases adenine (A) and guanine (G), and the pyrimidine bases thymine (T), cytosine (C) and uracil (U). Modified nucleobases include other synthetic and natural nucleobases such as 5-methylcytosine (5-me-C), 5-hydroxymethyl cytosine, xanthine, hypoxanthine, 2-aminoadenine, 6-methyl and other alkyl derivatives of adenine and guanine, 2-propyl and other alkyl derivatives of adenine and guanine, 2-thiouracil, 2-thiothymine and 2-thiocytosine, 5-halouracil and cytosine, 5-propynyl uracil and cytosine, 6-azo uracil, cytosine and thymine, 5-uracil (pseudouracil), 4-thiouracil, 8-halo, 8-amino, 8-thiol, 8-thioalkyl, 8-hydroxyl and other 8-substituted adenines and guanines, 5-halo particularly 5-bromo, 5-trifluoromethyl and other 5-substituted uracils and cytosines, 7-methylguanine and 7-methyladenine, 8-azaguanine and 8-azaadenine, 7-deazaguanine and 7-deazaadenine and 3-deazaguanine

and 3-deazaadenine. Further nucleobases include those disclosed in United States Patent No. 3,687,808, those disclosed in *The Concise Encyclopedia Of Polymer Science And Engineering*, pages 858-859, Kroschwitz, J.I., ed. John Wiley & Sons, 1990, those disclosed by
5 Englisch et al., *Angewandte Chemie*, International Edition, 1991, 30, 613, and those disclosed by Sanghvi, Y.S., Chapter 15, *Antisense Research and Applications*, pages 289-302, Crooke, S.T. and Lebleu, B. ed., CRC Press, 1993. Certain of these nucleobases are particularly useful for increasing the binding affinity of the oligomeric compounds
10 of the invention. These include 5-substituted pyrimidines, 6-azapyrimidines and N-2, N-6 and O-6 substituted purines, including 2-aminopropyladenine, 5-propynyluracil and 5-propynylcytosine, 5-methylcytosine substitutions have been shown to increase nucleic acid duplex stability by 0.6-1.2°C (Sanghvi, Y.S., Crooke, S.T. and Lebleu,
15 B., eds, *Antisense Research and Applications*, CRC Press, Boca Raton, 1993, pp. 276-278) and are presently preferred base substitutions, even more particularly when combined with 2'-O-methoxyethyl sugar modifications.

[0075] Representative United States patents that teach the
20 preparation of certain of the above noted modified nucleobases as well as other modified nucleobases include, but are not limited to, the above noted U.S. 3,687,808, as well as U.S.: 4,845,205; 5,130,302; 5,134,066; 5,175,273; 5,367,066; 5,432,272; 5,457,187; 5,459,255; 5,484,908; 5,502,177; 5,525,711; 5,552,540; 5,587,469; 5,594,121, 5,596,091;
25 5,614,617; 5,750,692, and 5,681,941, each of which is herein incorporated by reference.

[0076] Another modification of the oligonucleotides of the invention involves chemically linking to the oligonucleotide one or more moieties or conjugates, which enhance the activity, cellular distribution, or
30 cellular uptake of the oligonucleotide. Such moieties include but are not limited to lipid moieties such as a cholesterol moiety (Letsinger et al., *Proc. Natl. Acad. Sci. USA*, 1989, 86, 6553-6556), cholic acid (Manoharan et al., *Bioorg. Med. Chem. Let.*, 1994, 4, 1053-1060), a

- thioether, e.g., hexyl-S-tritylthiol (Manoharan et al., *Ann. N.Y. Acad. Sci.*, 1992, 660, 306-309; Manoharan et al., *Bioorg. Med. Chem. Lett.*, 1993, 3, 2765-2770), a thiocholesterol (Oberhauser et al., *Nucl. Acids Res.*, 1992, 20, 533-538), an aliphatic chain, e.g., dodecandiol or
- 5 undecyl residues (Saison-Behmoaras et al., *EMBO J.*, 1991, 10, 1111-1118; Kabanov et al., *FEBS Lett.*, 1990, 259, 327-330; Svinarchuk et al., *Biochimie*, 1993, 75, 49-54), a phospholipid, e.g., di-hexadecyl-rac-glycerol or triethylammonium 1,2-di-O-hexadecyl-rac-glycero-3-H-phosphonate (Manoharan et al., *Tetrahedron Lett.*, 1995, 36, 3651-3654;
- 10 Shea et al., *Nucl. Acids Res.*, 1990, 18, 3777-3783), a polyamine or a polyethylene glycol chain (Manoharan et al., *Nucleosides & Nucleotides*, 1995, 14, 969-973), or adamantane acetic acid (Manoharan et al., *Tetrahedron Lett.*, 1995, 36, 365'-3654), a palmityl moiety (Mishra et al., *Biochim. Biophys. Acta*, 1995, 1264, 229-237), or an octadecylamine
- 15 or hexylamino-carbonyl-oxycholesterol moiety (Crooke et al., *J. Pharmacol. Exp. Ther.*, 1996, 277, 923-937).

[0077] Representative United States patents that teach the preparation of such oligonucleotide conjugates include, but are not limited to, U.S. 4,828,979; 4,948,882; 5,218,105; 5,525,465; 5,541,313;

20 5,545,730; 5,552,538; 5,578,717; 5,580,731; 5,580,731; 5,591,584; 5,109,124; 5,118,802; 5,138,045; 5,414,077; 5,486,603; 5,512,439; 5,578,718; 5,608,046; 4,587,044; 4,605,735; 4,667,025; 4,762,779; 4,789,737; 4,824,941; 4,835,263; 4,876,335; 4,904,582; 4,958,013; 5,082,830; 5,112,963; 5,214,136; 5,082,830; 5,112,963; 5,214,136;

25 5,245,022; 5,254,469; 5,258,506; 5,262,536; 5,272,250; 5,292,873; 5,317,098; 5,371,241; 5,391,723; 5,416,203; 5,451,463; 5,510,475; 5,512,667; 5,514,785; 5,565,552; 5,567,810; 5,574,142; 5,585,481; 5,587,371; 5,595,726; 5,597,696; 5,599,923; 5,599,928 and 5,688,941, each of which is herein incorporated by reference.

30 [0078] It is not necessary for all positions in a given compound to be uniformly modified, and in fact more than one of the aforementioned modifications may be incorporated in a single compound or even at a single nucleoside within an oligonucleotide. The present invention also

includes antisense compounds, which are chimeric compounds.

"Chimeric" antisense compounds or "chimeras," in the context of this invention, are antisense compounds, particularly oligonucleotides, which contain two or more chemically distinct regions, each made up of at least one monomer unit, i.e., a nucleotide in the case of an oligonucleotide compound. These oligonucleotides typically contain at least one region wherein the oligonucleotide is modified so as to confer upon the oligonucleotide increased resistance to nuclease degradation, increased cellular uptake, and/or increased binding affinity for the target nucleic acid. An additional region of the oligonucleotide may serve as a substrate for enzymes capable of cleaving RNA:DNA or RNA:RNA hybrids. By way of example, RNase H is a cellular endonuclease, which cleaves the RNA strand of RNA:DNA duplex. Activation of RNase H, therefore, results in cleavage of the RNA target, thereby greatly enhancing the efficiency of oligonucleotide inhibition of gene expression. Consequently, comparable results can often be obtained with shorter oligonucleotides when chimeric oligonucleotides are used, compared to phosphorothioate deoxy oligonucleotides hybridizing to the same target region. Cleavage of the RNA target can be routinely detected by gel electrophoresis and, if necessary, associated nucleic acid hybridization techniques known in the art.

[0079] Chimeric antisense compounds of the invention may be formed as composite structures of two or more oligonucleotides, modified oligonucleotides, oligonucleosides and/or oligonucleotide mimetics as described above. Such compounds have also been referred to in the art as hybrids or gapmers. Representative United States patents that teach the preparation of such hybrid structures include, but are not limited to, U.S. 5,013,830; 5,149,797; 5,220,007; 5,256,775; 5,366,878; 5,403,711; 5,491,133; 5,565,350; 5,623,065; 5,652,355; 5,652,356; and 5,700,922, certain of which are commonly owned with the instant application, and each of which is herein incorporated by reference in its entirety.

[0080] The antisense compounds used in accordance with this invention may be conveniently, and routinely made through the well-known technique of solid phase synthesis. Equipment for such synthesis is sold by several vendors including, for example, Applied Biosystems
5 (Foster City, CA). Any other means for such synthesis known in the art may additionally or alternatively be employed. It is well known to use similar techniques to prepare oligonucleotides such as the phosphorothioates and alkylated derivatives.

[0081] The antisense compounds of the invention are synthesized in
10 vitro and do not include antisense compositions of biological origin, or genetic vector constructs designed to direct the in vivo synthesis of antisense molecules. The compounds of the invention may also be admixed, encapsulated, conjugated or otherwise associated with other molecules, molecule structures or mixtures of compounds, as for
15 example, liposomes, receptor targeted molecules, oral, rectal, topical or other formulations, for assisting in uptake, distribution and/or absorption. Representative United States patents that teach the preparation of such uptake, distribution and/or absorption assisting formulations include, but are not limited to, U.S. 5,108,921; 5,354,844;
20 5,416,016; 5,459,127; 5,521,291; 5,543,158; 5,547,932; 5,583,020; 5,591,721; 4,426,330; 4,534,899; 5,013,556; 5,108,921; 5,213,804; 5,227,170; 5,264,221; 5,356,633; 5,395,619; 5,416,016; 5,417,978; 5,462,854; 5,469,854; 5,512,295; 5,527,528; 5,534,259; 5,543,152; 5,556,948; 5,580,575; and 5,595,756, each of which is herein
25 incorporated by reference.

[0082] The antisense compounds of the invention encompass any pharmaceutically acceptable salts, esters, or salts of such esters, or any other compound which, upon administration to an animal including a human, is capable of providing (directly or indirectly) the biologically
30 active metabolite or residue thereof. Accordingly, for example, the disclosure is also drawn to prodrugs and pharmaceutically acceptable salts of the compounds of the invention, pharmaceutically acceptable salts of such prodrugs, and other bioequivalents.

[0083] The term "prodrug" indicates a therapeutic agent that is prepared in an inactive form that is converted to an active form (i.e., drug) within the body or cells thereof by the action of endogenous enzymes or other chemicals and/or conditions. In particular, prodrug
5 versions of the oligonucleotides of the invention are prepared as SATE [(S-acetyl-2-thioethyl) phosphate] derivatives according to the methods disclosed in WO 93/24510 to Gosselin et al., published December 9, 1993 or in WO 94/26764 to Imbach et al.

[0084] The term "pharmaceutically acceptable salts" refers to
10 physiologically and pharmaceutically acceptable salts of the compounds of the invention: i.e., salts that retain the desired biological activity of the parent compound and do not impart undesired toxicological effects thereto.

[0085] Pharmaceutically acceptable base addition salts are formed
15 with metals or amines, such as alkali and alkaline earth metals or organic amines. Examples of metals used as cations are sodium, potassium, magnesium, calcium, and the like. Examples of suitable amines are N, N'-dibenzylethylenediamine, chlorprocaine, choline, diethanolamine, dicyclohexylamine, ethylenediamine, N-
20 methylglucamine, and procaine (see, for example, Berge et al., "Pharmaceutical Salts," *J. of Pharma Sci.*, 1977, 66, 119). The base addition salts of said acidic compounds are prepared by contacting the free acid form with a sufficient amount of the desired base to produce the salt in the conventional manner. The free acid form may be
25 regenerated by contacting the salt form with an acid and isolating the free acid in the conventional manner. The free acid forms differ from their respective salt forms somewhat in certain physical properties such as solubility in polar solvents, but otherwise the salts are equivalent to their respective free acid for purposes of the present invention. As used
30 herein, a "pharmaceutical addition salt" includes a pharmaceutically acceptable salt of an acid form of one of the components of the compositions of the invention. These include organic or inorganic acid salts of the amines. Preferred acid salts are the hydrochlorides, acetates,

salicylates, nitrates, and phosphates. Other suitable pharmaceutically acceptable salts are well known to those skilled in the art and include basic salts of a variety of inorganic and organic acids, such as, for example, with inorganic acids, such as for example hydrochloric acid, hydrobromic acid, sulfuric acid or phosphoric acid; with organic carboxylic, sulfonic, sulfo or phospho acids or N-substituted sulfamic acids, for example acetic acid, propionic acid, glycolic acid, succinic acid, maleic acid, hydroxymaleic acid, methylmaleic acid, fumaric acid, malic acid, tartaric acid, lactic acid, oxalic acid, gluconic acid, glucaric acid, glucuronic acid, citric acid, benzoic acid, cinnamic acid, mandelic acid, salicylic acid, 4-aminosalicylic acid, 2-phenoxybenzoic acid, 2-acetoxybenzoic acid, embonic acid, nicotinic acid or isonicotinic acid; and with amino acids, such as the 20 alpha-amino acids involved in the synthesis of proteins in nature, for example glutamic acid or aspartic acid, and also with phenylacetic acid, methanesulfonic acid, ethanesulfonic acid, 2-hydroxyethanesulfonic acid, ethane-1,2-disulfonic acid, benzenesulfonic acid, 4-methylbenzenesulfonic acid, naphthalene-2-sulfonic acid, naphthalene-1,5-disulfonic acid, 2- or 3-phosphoglycerate, glucose-6-phosphate, N-cyclohexylsulfamic acid (with the formation of cyclamates), or with other acid organic compounds, such as ascorbic acid. Pharmaceutically acceptable salts of compounds may also be prepared with a pharmaceutically acceptable cation. Suitable pharmaceutically acceptable cations are well known to those skilled in the art and include alkaline, alkaline earth, ammonium, and quaternary ammonium cations. Carbonates or hydrogen carbonates are also possible.

[0086] For oligonucleotides, preferred examples of pharmaceutically acceptable salts include but are not limited to (a) salts formed with cations such as sodium, potassium, ammonium, magnesium, calcium, polyamines such as spermine and spermidine, etc.; (b) acid addition salts formed with inorganic acids, for example hydrochloric acid, hydrobromic acid, sulfuric acid, phosphoric acid, nitric acid and the like; (c) salts formed with organic acids such as, for example, acetic acid,

oxalic acid, tartaric acid, succinic acid, maleic acid, fumaric acid, gluconic acid, citric acid, malic acid, ascorbic acid, benzoic acid, tannic acid, palmitic acid, alginic acid, polyglutamic acid, naphthalenesulfonic acid, methanesulfonic acid, p-toluenesulfonic acid,

- 5 naphthalenedisulfonic acid, polygalacturonic acid, and the like; and (d) salts formed from elemental anions such as chlorine, bromine, and iodine.

[0087] The antisense compounds of the present invention can be utilized for diagnostics, therapeutics, prophylaxis, as research reagents,
10 and kits. For therapeutics, an animal, preferably a human, suspected of having a disease or disorder, which can be treated by modulating the expression of ESM-1, is treated by administering antisense compounds in accordance with this invention. The compounds of the invention can be utilized in pharmaceutical compositions by adding an effective
15 amount of an antisense compound to a suitable pharmaceutically acceptable diluent or carrier. Use of the antisense compounds and methods of the invention may also be useful prophylactically, e.g., to prevent or delay infection, inflammation, or tumor formation, for example.

20 [0088] The antisense compounds of the invention are useful for research and diagnostics, because these compounds hybridize to nucleic acids encoding ESM-1, enabling sandwich and other assays to easily be constructed to exploit this fact. Hybridization of the antisense oligonucleotides of the invention with a nucleic acid encoding ESM-1
25 can be detected by means known in the art. Such means may include conjugation of an enzyme to the oligonucleotide, radiolabelling of the oligonucleotide or any other suitable detection means. Kits using such detection means for detecting the level of ESM-1 in a sample may also be prepared.

30 [0089] The present invention also includes pharmaceutical compositions and formulations, which include the antisense compounds of the invention. The pharmaceutical compositions of the present invention may be administered in a number of ways depending upon

whether local or systemic treatment is desired and upon the area to be treated. Administration may be topical (including ophthalmic and to mucous membranes including vaginal and rectal delivery), pulmonary, e.g., by inhalation or insufflation of powders or aerosols, including by
5 nebulizer; intratracheal, intranasal, epidermal and transdermal), oral or parenteral. Parenteral administration includes intravenous, intraarterial, subcutaneous, intraperitoneal or intramuscular injection or infusion; or intracranial, e.g., intrathecal or intraventricular, administration.

Oligonucleotides with at least one 2'-O-methoxyethyl modification are
10 believed to be particularly useful for oral administration.

[0090] Pharmaceutical compositions and formulations for topical administration may include transdermal patches, ointments, lotions, creams, gels, drops, suppositories, sprays, liquids, and powders. Conventional pharmaceutical carriers, aqueous, powder or oily bases,
15 thickeners and the like may be necessary or desirable. Coated condoms, gloves, and the like may also be useful.

[0091] Compositions and formulations for oral administration include powders or granules, suspensions, or solutions in water or non-aqueous media, capsules, sachets, or tablets. Thickeners, flavoring
20 agents, diluents, emulsifiers, dispersing aids, or binders may be desirable.

[0092] Compositions and formulations for parenteral, intrathecal or intraventricular administration may include sterile aqueous solutions, which may also contain buffers, diluents and other suitable additives
25 such as, but not limited to, penetration enhancers, carrier compounds and other pharmaceutically acceptable carriers or excipients.

[0093] Pharmaceutical compositions of the present invention include, but are not limited to, solutions, emulsions, and liposome-containing formulations. These compositions may be generated from a
30 variety of components that include, but are not limited to, preformed liquids, self-emulsifying solids and self-emulsifying semisolids.

[0094] The pharmaceutical formulations of the present invention, which may conveniently be presented in unit dosage form, may be

prepared according to conventional techniques well known in the pharmaceutical industry. Such techniques include the step of bringing into association the active ingredients with the pharmaceutical carrier(s) or excipient(s). In general the formulations are prepared by uniformly
5 and intimately bringing into association the active ingredients with liquid carriers or finely divided solid carriers or both, and then, if necessary, shaping the product.

[0095] The compositions of the present invention may be formulated into any of many possible dosage forms such as, but not limited to,
10 tablets, capsules, liquid syrups, soft gels, suppositories, and enemas. The compositions of the present invention may also be formulated as suspensions in aqueous, non-aqueous or mixed media. Aqueous suspensions may further contain substances, which increase the viscosity of the suspension including, for example, sodium
15 carboxymethylcellulose, sorbitol, and/or dextran. The suspension may also contain stabilizers.

[0096] In one embodiment of the present invention the pharmaceutical compositions may be formulated and used as foams. Pharmaceutical foams include formulations such as, but not limited to,
20 emulsions, microemulsions, creams, jellies, and liposomes. While basically similar in nature these formulations vary in the components and the consistency of the final product. The preparation of such compositions and formulations is generally known to those skilled in the pharmaceutical and formulation arts and may be applied to the
25 formulation of the compositions of the present invention. Emulsions

[0097] The compositions of the present invention may be prepared and formulated as emulsions. Emulsions are typically heterogenous systems of one liquid dispersed in another in the form of droplets usually exceeding 0.1 μm in diameter. (Idson, in *Pharmaceutical Dosage*
30 *Forms*, Lieberman, Rieger and Banker (Eds.), 1988, Marcel Dekker, Inc., New York, N.Y., volume 1, p. 199; Rosoff, in *Pharmaceutical Dosage Forms*, Lieberman, Rieger and Banker (Eds.), 1988, Marcel Dekker, Inc., New York, N.Y., Volume 1, p. 245; Block in

Pharmaceutical Dosage Forms, Lieberman, Rieger and Banker (Eds.), 1988, Marcel Dekker, Inc., New York, N.Y., volume 2, p. 335; Higuchi et al., in *Remington's Pharmaceutical Sciences*, Mack Publishing Co., Easton, PA, 1985, p. 301). Emulsions are often biphasic systems

5 comprising of two immiscible liquid phases intimately mixed and dispersed with each other. In general, emulsions may be either water-in-oil (w/o) or of the oil-in-water (o/w) variety. When an aqueous phase is finely divided into and dispersed as minute droplets into a bulk oily phase the resulting composition is called a water-in-oil (w/o) emulsion.

10 Alternatively, when an oily phase is finely divided into and dispersed as minute droplets into a bulk aqueous phase the resulting composition is called an oil-in-water (o/w) emulsion. Emulsions may contain additional components in addition to the dispersed phases and the active drug, which may be present as a solution in either the aqueous phase, oily

15 phase or itself as a separate phase. Pharmaceutical excipients such as emulsifiers, stabilizers, dyes, and anti-oxidants may also be present in emulsions as needed. Pharmaceutical emulsions may also be multiple emulsions that are comprised of more than two phases such as, for example, in the case of oil-in-water-in-oil (o/w/o) and water-in-oil-in-

20 water (w/o/w) emulsions. Such complex formulations often provide certain advantages that simple binary emulsions do not. Multiple emulsions in which individual oil droplets of an o/w emulsion enclose small water droplets constitute a w/o/w emulsion. Likewise a system of oil droplets enclosed in globules of water stabilized in an oily

25 continuous provides an o/w/o emulsion.

[0098] Emulsions are characterized by little or no thermodynamic stability. Often, the dispersed or discontinuous phase of the emulsion is well dispersed into the external or continuous phase and maintained in this form through the means of emulsifiers or the viscosity of the

30 formulation. Either of the phases of the emulsion may be a semisolid or a solid, as is the case of emulsion-style ointment bases and creams. Other means of stabilizing emulsions entail the use of emulsifiers that may be incorporated into either phase of the emulsion. Emulsifiers may

broadly be classified into four categories: synthetic surfactants, naturally occurring emulsifiers, absorption bases, and finely dispersed solids (Idson, in *Pharmaceutical Dosage Forms*, Lieberman, Rieger and Banker (Eds.), 1988, Marcel Dekker, Inc., New York, N.Y., volume 1, p. 199).

[0099] Synthetic surfactants, also known as surface active agents, have found wide applicability in the formulation of emulsions and have been reviewed in the literature (Rieger, in *Pharmaceutical Dosage Forms*, Lieberman, Rieger and Banker (Eds.), 1988, Marcel Dekker, Inc., New York, N.Y., volume 1, p. 285; Idson, in *Pharmaceutical Dosage Forms*, Lieberman, Rieger and Banker (Eds.), Marcel Dekker, Inc., New York, N.Y., 1988, volume 1, p. 199). Surfactants are typically amphiphilic and comprise a hydrophilic and a hydrophobic portion. The ratio of the hydrophilic to the hydrophobic nature of the surfactant has been termed the hydrophile/lipophile balance (HLB) and is a valuable tool in categorizing and selecting surfactants in the preparation of formulations. Surfactants may be classified into different classes based on the nature of the hydrophilic group: nonionic, anionic, cationic, and amphoteric (Rieger, in *Pharmaceutical Dosage Forms*, Lieberman, Rieger and Banker (Eds.), 1988, Marcel Dekker, Inc., New York, N.Y., volume 1, p. 285).

[00100] Naturally occurring emulsifiers used in emulsion formulations include lanolin, beeswax, phosphatides, lecithin, and acacia. Absorption bases possess hydrophilic properties such that they can soak up water to form w/o emulsions yet retain their semisolid consistencies, such as anhydrous lanolin and hydrophilic petrolatum. Finely divided solids have also been used as good emulsifiers especially in combination with surfactants and in viscous preparations. These include polar inorganic solids, such as heavy metal hydroxides, non-swelling clays such as bentonite, attapulgite, hectorite, kaolin, montmorillonite, colloidal aluminum silicate and colloidal magnesium aluminum silicate, pigments and nonpolar solids such as carbon or glyceryl tristearate.

- [00101] A large variety of non-emulsifying materials are also included in emulsion formulations and contribute to the properties of emulsions. These include fats, oils, waxes, fatty acids, fatty alcohols, fatty esters, humectants, hydrophilic colloids, preservatives, and
- 5 antioxidants (Block, in *Pharmaceutical Dosage Forms*, Lieberman, Rieger and Banker (Eds.), 1988, Marcel Dekker, Inc., New York, N.Y., volume 1, p. 335; Idson, in *Pharmaceutical Dosage Forms*, Lieberman, Rieger and Banker (Eds.), 1988, Marcel Dekker, Inc., New York, N.Y., volume 1, p. 199).
- 10 [00102] Hydrophilic colloids or hydrocolloids include naturally occurring gums and synthetic polymers such as polysaccharides (for example, acacia, agar, alginic acid, carrageenan, guar gum, karaya gum, and tragacanth), cellulose derivatives (for example, carboxymethylcellulose and carboxypropylcellulose), and synthetic
- 15 polymers (for example, carbomers, cellulose ethers, and carboxyvinyl polymers). These disperse or swell in water to form colloidal solutions that stabilize emulsions by forming strong interfacial films around the dispersed phase droplets and by increasing the viscosity of the external phase.
- 20 [00103] Since emulsions often contain a number of ingredients such as carbohydrates, proteins, sterols, and phosphatides that may readily support the growth of microbes, these formulations often incorporate preservatives. Commonly used preservatives included in emulsion formulations include methyl paraben, propyl paraben, quaternary
- 25 ammonium salts, benzalkonium chloride, esters of p-hydroxybenzoic acid, and boric acid. Antioxidants are also commonly added to emulsion formulations to prevent deterioration of the formulation. Antioxidants used may be free radical scavengers such as tocopherols, alkyl gallates, butylated hydroxyanisole, butylated hydroxytoluene, or reducing agents
- 30 such as ascorbic acid and sodium metabisulfite, and antioxidant synergists such as citric acid, tartaric acid, and lecithin.
- [00104] The application of emulsion formulations via dermatological, oral, and parenteral routes and methods for their manufacture have been

reviewed in the literature (Idson, in *Pharmaceutical Dosage Forms*, Lieberman, Rieger and Banker (Eds.), 1988, Marcel Dekker, Inc., New York, N.Y., volume 1, p. 199). Emulsion formulations for oral delivery have been very widely used because of reasons of ease of formulation, efficacy from an absorption and bioavailability standpoint. (Rosoff, in *Pharmaceutical Dosage Forms*, Lieberman, Rieger and Banker (Eds.), 1988, Marcel Dekker, Inc., New York, N.Y., volume 1, p. 245; Idson, in *Pharmaceutical Dosage Forms*, Lieberman, Rieger and Banker (Eds.), 1988, Marcel Dekker, Inc., New York, N.Y., volume 1, p. 199).

Mineral-oil base laxatives, oil-soluble vitamins, and high fat nutritive preparations are among the materials that have commonly been administered orally as o/w emulsions.

[00105] In one embodiment of the present invention, the compositions of oligonucleotides and nucleic acids are formulated as microemulsions. A microemulsion may be defined as a system of water, oil, and amphiphile, which is a single optically isotropic, and thermodynamically stable liquid solution (Rosoff, in *Pharmaceutical Dosage Forms*, Lieberman, Rieger and Banker (Eds.), 1988, Marcel Dekker, Inc., New York, N.Y., volume 1, p. 245). Typically microemulsions are systems that are prepared by first dispersing an oil in an aqueous surfactant solution and then adding a sufficient amount of a fourth component, generally an intermediate chain-length alcohol to form a transparent system. Therefore, microemulsions have also been described as thermodynamically stable, isotropically clear dispersions of two immiscible liquids that are stabilized by interfacial films of surface-active molecules (Leung and Shah, in: *Controlled Release of Drugs: Polymers and Aggregate Systems*, Rosoff, M., Ed., 1989, VCH Publishers, New York, pages 1852-5). Microemulsions commonly are prepared via a combination of three to five components that include oil, water, surfactant, cosurfactant, and electrolyte. Whether the microemulsion is of the water-in-oil (w/o) or an oil-in-water (o/w) type is dependent on the properties of the oil and surfactant used and on the structure and geometric packing of the polar heads and hydrocarbon tails

of the surfactant molecules (Schott, in *Remington's Pharmaceutical Sciences*, Mack Publishing Co., Easton, PA, 1985, p. 271).

- [00106] The phenomenological approach utilizing phase diagrams has been extensively studied and has yielded a comprehensive knowledge, to
- 5 one skilled in the art, of how to formulate microemulsions (Rosoff, in *Pharmaceutical Dosage Forms*, Lieberman, Rieger and Banker (Eds.), 1988, Marcel Dekker, Inc., New York, N.Y., volume 1, p. 245; Block, in *Pharmaceutical Dosage Forms*, Lieberman, Rieger and Banker (Eds.), 1988, Marcel Dekker, Inc., New York, N.Y., volume 1, p. 335).
- 10 Compared to conventional emulsions, microemulsions offer the advantage of solubilizing water-insoluble drugs in a formulation of thermodynamically stable droplets that are formed spontaneously.
- [00107] Surfactants used in the preparation of microemulsions include, but are not limited to, ionic surfactants, non-ionic surfactants,
- 15 Brij 96, polyoxyethylene oleyl ethers, polyglycerol fatty acid esters, tetraglycerol monolaurate (ML310), tetraglycerol monooleate (MO310), hexaglycerol monooleate (PO310), hexaglycerol pentaoleate (PO500), decaglycerol monocaprate (MCA750), decaglycerol monooleate (MO750), decaglycerol sequioleate (S0750), decaglycerol decaoleate
- 20 (DAO750), alone or in combination with cosurfactants. The cosurfactant, usually a short-chain alcohol such as ethanol, 1-propanol, and 1-butanol, serves to increase the interfacial fluidity by penetrating into the surfactant film and consequently creating a disordered film because of the void space generated among surfactant molecules.
- 25 Microemulsions may, however, be prepared without the use of cosurfactants and alcohol-free self-emulsifying microemulsion systems are known in the art. The aqueous phase may typically be, but is not limited to, water, an aqueous solution of the drug, glycerol, PEG300, PEG400, polyglycerols, propylene glycols, and derivatives of ethylene
- 30 glycol. The oil phase may include, but is not limited to, materials such as Captex 300, Captex 355, Capmul MCM, fatty acid esters, medium chain (C8-C12) mono, di, and triglycerides, polyoxyethylated glyceryl fatty

acid esters, fatty alcohols, polyglycolized glycerides, saturated polyglycolized C8-C10 glycerides, vegetable oils and silicone oil.

[00108] Microemulsions are particularly of interest from the standpoint of drug solubilization and the enhanced absorption of drugs.

- 5 Lipid based microemulsions (both o/w and w/o) have been proposed to enhance the oral bioavailability of drugs, including peptides (Constantinides et al., *Pharmaceutical Research*, 1994, 11, 1385-1390; Ritschel, *Meth. Find. Exp. Clin. Pharmacol.*, 1993, 13, 205).

- Microemulsions afford advantages of improved drug solubilization, protection of drug from enzymatic hydrolysis, possible enhancement of drug absorption due to surfactant-induced alterations in membrane fluidity and permeability, ease of preparation, ease of oral administration over solid dosage forms, improved clinical potency, and decreased toxicity (Constantinides et al., *Pharmaceutical Research*, 1994, 11, 1385; Ho et al., *J. Pharm. Sci.*, 1996, 85, 138-143). Often
- 15 microemulsions may form spontaneously when their components are brought together at ambient temperature. This may be particularly advantageous when formulating thermolabile drugs, peptides, or oligonucleotides. Microemulsions have also been effective in the transdermal delivery of active components in both cosmetic and pharmaceutical applications. It is expected that the microemulsion compositions and formulations of the present invention will facilitate the increased systemic absorption of oligonucleotides and nucleic acids from the gastrointestinal tract, as well as improve the local cellular uptake of oligonucleotides and nucleic acids within the gastrointestinal tract, vagina, buccal cavity and other areas of administration.
- 20
- 25

- [00109]** Microemulsions of the present invention may also contain additional components and additives such as sorbitan monostearate (Grill 3), Labrasol, and penetration enhancers to improve the properties of the formulation and to enhance the absorption of the oligonucleotides and nucleic acids of the present invention. Penetration enhancers used in the microemulsions of the present invention may be classified as belonging to one of five broad categories - surfactants, fatty acids, bile
- 30

salts, chelating agents, and non-chelating non-surfactants (Lee et al., *Critical Reviews in Therapeutic Drug Carrier Systems*, 1991, p. 92).

Each of these classes has been discussed above.

[00110] Liposomes

- 5 [00111] There are many organized surfactant structures besides microemulsions that have been studied and used for the formulation of drugs. These include monolayers, micelles, bilayers, and vesicles. Vesicles, such as liposomes, have attracted great interest because of their specificity and the duration of action they offer from the standpoint of
- 10 drug delivery. As used in the present invention, the term "liposome" means a vesicle composed of amphiphilic lipids arranged in a spherical bilayer or bilayers.

- [00112] Liposomes are unilamellar or multilamellar vesicles which have a membrane formed from a lipophilic material and an aqueous
- 15 interior. The aqueous portion contains the composition to be delivered. Cationic liposomes possess the advantage of being able to fuse to the cell wall. Noncationic liposomes, although not able to fuse as efficiently with the cell wall, are taken up by macrophages in vivo.

- [00113] In order to cross intact mammalian skin, lipid vesicles must
- 20 pass through a series of fine pores, each with a diameter less than 50 nm, under the influence of a suitable transdermal gradient. Therefore, it is desirable to use a liposome, which is highly deformable and able to pass through such fine pores.

- [00114] Further advantages of liposomes include; liposomes obtained
- 25 from natural phospholipids are biocompatible and biodegradable; liposomes can incorporate a wide range of water and lipid soluble drugs; liposomes can protect encapsulated drugs in their internal compartments from metabolism and degradation (Rosoff, in *Pharmaceutical Dosage Forms*, Lieberman, Rieger and Banker (Eds.), 1988, Marcel Dekker,
- 30 Inc., New York, N.Y., volume 1, P. 245). Important considerations in the preparation of liposome formulations are the lipid surface charge, vesicle size, and the aqueous volume of the liposomes.

[00115] Liposomes are useful for the transfer and delivery of active ingredients to the site of action. Because the liposomal membrane is structurally similar to biological membranes, when liposomes are applied to a tissue, the liposomes start to merge with the cellular
5 membranes. As the merging of the liposome and cell progresses, the liposomal contents are emptied into the cell where the active agent may act.

[00116] Liposomal formulations have been the focus of extensive investigation as the mode of delivery for many drugs. There is growing
10 evidence that for topical administration, liposomes present several advantages over other formulations. Such advantages include reduced side-effects related to high systemic absorption of the administered drug, increased accumulation of the administered drug at the desired target, and the ability to administer a wide variety of drugs, both hydrophilic
15 and hydrophobic, into the skin.

[00117] Several reports have detailed the ability of liposomes to deliver agents including high-molecular weight DNA into the skin. Compounds including analgesics, antibodies, hormones, and high-molecular weight DNAs have been administered to the skin. The
20 majority of applications resulted in the targeting of the upper epidermis.

[00118] Liposomes fall into two broad classes. Cationic liposomes are positively charged liposomes, which interact with the negatively charged DNA molecules to form a stable complex. The positively charged DNA/liposome complex binds to the negatively charged cell
25 surface and is internalized in an endosome. Due to the acidic pH within the endosome, the liposomes are ruptured, releasing their contents into the cell cytoplasm (Wang et al., *Biochem. Biophys. Res. Commun.*, 1987, 147, 980 - 985)

[00119] Liposomes, which are pH-sensitive or negatively charged, entrap DNA rather than complex with it. Since both the DNA and the
30 lipid are similarly charged, repulsion rather than complex formation occurs. Nevertheless, some DNA is entrapped within the aqueous interior of these liposomes. pH-sensitive liposomes have been used to

deliver DNA encoding the thymidine kinase gene to cell monolayers in culture. Expression of the exogenous gene was detected in the target cells (Zhou et al., *Journal of Controlled Release*, 1992, 19, 269-274).

- [00120] One major type of liposomal composition includes
- 5 phospholipids other than naturally derived phosphatidylcholine. Neutral liposome compositions, for example, can be formed from dimyristoyl phosphatidylcholine (DMPC) or dipalmitoyl phosphatidylcholine (DPPC). Anionic liposome compositions generally are formed from dimyristoyl phosphatidylglycerol, while anionic fusogenic liposomes are
- 10 formed primarily from dioleoyl phosphatidylethanolamine (DOPE). Another type of liposomal composition is formed from phosphatidylcholine (PC) such as, for example, soybean PC, and egg PC. Another type is formed from mixtures of phospholipid and/or phosphatidylcholine and/or cholesterol.
- 15 [00121] Several studies have assessed the topical delivery of liposomal drug formulations to the skin. Application of liposomes containing interferon to guinea pig skin resulted in a reduction of skin herpes sores while delivery of interferon via other means (e.g. as a solution or as an emulsion) was ineffective (Weiner et al., *Journal of*
- 20 *Drug Targeting*, 1992, 2, 405-410). Further, an additional study tested the efficacy of interferon administered as part of a liposomal formulation to the administration of interferon using an aqueous system, and concluded that the liposomal formulation was superior to aqueous administration (du Plessis et al., *Antiviral Research*, 1992, 18, 259-265).
- 25 [00122] Non-ionic liposomal systems have also been examined to determine their utility in the delivery of drugs to the skin, in particular systems comprising non-ionic surfactant and cholesterol. Non-ionic liposomal formulations comprising Novasome™ I (glyceryl dilaurate/cholesterol/polyoxyethylene-10-stearyl ether) and Novasome™
- 30 II (glyceryl distearate/ cholesterol/polyoxyethylene-10-stearyl ether) were used to deliver cyclosporin-A into the dermis of mouse skin. Results indicated that such non-ionic liposomal systems were effective

in facilitating the deposition of cyclosporin-A into different layers of the skin (Hu et al. *S.T.P. Pharma. Sci.*, 1994, 4, 6, 466).

[00123] Liposomes also include "sterically stabilized" liposomes, a term, which, as used herein, refers to liposomes comprising one or more specialized lipids that, when incorporated into liposomes, result in enhanced circulation lifetimes relative to liposomes lacking such, specialized lipids. Examples of sterically stabilized liposomes are those in which part of the vesicle-forming lipid portion of the liposome (A) comprises one or more glycolipids, such as monosialoganglioside G_{M1}, or (B) is derivatized with one or more hydrophilic polymers, such as a polyethylene glycol (PEG) moiety. While not wishing to be bound by any particular theory, it is thought in the art that, at least for sterically stabilized liposomes containing gangliosides, sphingomyelin, or PEG-derivatized lipids, the enhanced circulation half-life of these sterically stabilized liposomes derives from a reduced uptake into cells of the reticuloendothelial system (RES) (Allen et al., *FEBS Letters*, 1987, 223, 42; Wu et al., *Cancer Research*, 1993, 53, 3765).

[00124] Various liposomes comprising one or more glycolipids are known in the art. Papahadjopoulos et al. (*Ann. N.Y. Acad. Sci.*, 1987, 507, 64) reported the ability of monosialoganglioside G_{M1}, galactocerebroside sulfate, and phosphatidylinositol to improve blood half-lives of liposomes. These findings were expounded upon by Gabizon et al. (*Proc. Natl. Acad. Sci. U.S.A.*, 1988, 85, 6949). U.S. Patent No. 4,837,028 and WO 88/04924, both to Allen et al., disclose liposomes comprising (1) sphingomyelin and (2) the ganglioside G_{M1} or a galactocerebroside sulfate ester. U.S. Patent No. 5,543,152 (Webb et al.) discloses liposomes comprising sphingomyelin. Liposomes comprising 1,2-sn-dimyristoylphosphatidylcholine are disclosed in WO 97/13499 (Lim et al.).

[00125] Many liposomes comprising lipids derivatized with one or more hydrophilic polymers, and methods of preparation thereof, are known in the art. Sunamoto et al. (*Bull. Chem. Soc. Jpn.*, 1980, 53, 2778) described liposomes comprising a nonionic detergent, 2C₁₂15G,

which contains a PEG moiety. Illum et al. (*FEBS Lett.*, 1984, 167, 79) noted that hydrophilic coating of polystyrene particles with polymeric glycols results in significantly enhanced blood half-lives. Synthetic phospholipids modified by the attachment of carboxylic groups of polyalkylene glycols (e.g., PEG) are described by Sears (U.S. Patent Nos. 4,426,330 and 4,534,899). Klibanov et al. (*FEBS Lett.*, 1990, 268, 235) described experiments demonstrating that liposomes comprising phosphatidylethanolamine (PE) derivatized with PEG or PEG stearate have significant increases in blood circulation half-lives. Blume et al. (*Biochimica et Biophysica Acta*, 1990, 1029, 91) extended such observations to other PEG derivatized phospholipids, e.g., DSPE-PEG, formed from the combination of distearoylphosphatidylethanolamine (DSPE) and PEG. Liposomes having covalently bound PEG moieties on their external surface are described in European Patent No. EP 0 445 131 B1 and WO 90/04384 to Fisher. Liposome compositions containing 1-20 mole percent of PE derivatized with PEG, and methods of use thereof, are described by Woodle et al. (U.S. Patent Nos. 5,013,556 and 5,356,633) and Martin et al. (U.S. Patent No. 5,213,804 and European Patent No. EP 0 496 813 B1). Liposomes comprising a number of other lipid-polymer conjugates are disclosed in WO 91/05545 and U.S. Patent No. 5,225,212 (both to Martin et al.) and in WO 94/20073 (Zalipsky et al.) Liposomes comprising PEG-modified ceramide lipids are described in WO 96/10391 (Choi et al.). U.S. Patent Nos. 5,540,935 (Miyazaki et al.) and 5,556,948 (Tagawa et al.) describe PEG-containing liposomes that can be further derivatized with functional moieties on their surfaces.

[00126] A limited number of liposomes comprising nucleic acids are known in the art. WO 96/40062 to Thierry et al. discloses methods for encapsulating high molecular weight nucleic acids in liposomes. U.S. Patent No. 5,264,221 to Tagawa et al. discloses protein-bonded liposomes and asserts that the contents of such liposomes may include an antisense RNA. U.S. Patent No. 5,665,710 to Rahman et al. describes certain methods of encapsulating oligodeoxynucleotides in liposomes.

WO 97/04787 to Love et al. discloses liposomes comprising antisense oligonucleotides targeted to the raf gene.

[00127] Transfersomes are yet another type of liposomes, and are highly deformable lipid aggregates which are attractive candidates for drug delivery vehicles. Transfersomes may be described as lipid droplets, which are so highly deformable that they are easily able to penetrate through pores that are smaller than the droplet. Transfersomes are adaptable to the environment in which they are used, e.g. they are self-optimizing (adaptive to the shape of pores in the skin), self-repairing, frequently reach their targets without fragmenting, and often self-loading. To make transfersomes it is possible to add surface edge-activators, usually surfactants, to a standard liposomal composition. Transfersomes have been used to deliver serum albumin to the skin. The transfersome-mediated delivery of serum albumin has been shown to be as effective as subcutaneous injection of a solution containing serum albumin.

[00128] Surfactants find wide application in formulations such as emulsions (including microemulsions) and liposomes. The most common way of classifying and ranking the properties of the many different types of surfactants, both natural and synthetic, is by the use of the hydrophile/lipophile balance (HLB). The nature of the hydrophilic group (also known as the "head") provides the most useful means for categorizing the different surfactants used in formulations (Rieger, in *Pharmaceutical Dosage Forms*, Marcel Dekker, Inc., New York, NY, 1988, p. 285)

[00129] If the surfactant molecule is not ionized, it is classified as a nonionic surfactant. Nonionic surfactants find wide application in pharmaceutical and cosmetic products and are usable over a wide range of pH values. In general their HLB values range from 2 to about 18 depending on their structure. Nonionic surfactants include nonionic esters such as ethylene glycol esters, propylene glycol esters, glyceryl esters, polyglyceryl esters, sorbitan esters, sucrose esters, and ethoxylated esters. Nonionic alkanolamides and ethers such as fatty

alcohol ethoxylates, propoxylated alcohols, and ethoxylated/propoxylated block polymers are also included in this class. The polyoxyethylene surfactants are the most popular members of the nonionic surfactant class.

- 5 **[00130]** If the surfactant molecule carries a negative charge when it is dissolved or dispersed in water, the surfactant is classified as anionic. Anionic surfactants include carboxylates such as soaps, acyl lactylates, acyl amides of amino acids, esters of sulfuric acid such as alkyl sulfates and ethoxylated alkyl sulfates, sulfonates such as alkyl benzene
- 10 sulfonates, acyl isethionates, acyl taurates and sulfosuccinates, and phosphates. The most important members of the anionic surfactant class are the alkyl sulfates and the soaps.

[00131] If the surfactant molecule carries a positive charge when it is dissolved or dispersed in water, the surfactant is classified as cationic.

- 15 Cationic surfactants include quaternary ammonium salts and ethoxylated amines. The quaternary ammonium salts are the most used members of this class.

[00132] If the surfactant molecule has the ability to carry either a positive or negative charge, the surfactant is classified as amphoteric.

- 20 Amphoteric surfactants include acrylic acid derivatives, substituted alkylamides, N-alkylbetaines, and phosphatides.

[00133] The use of surfactants in drug products, formulations and in emulsions has been reviewed (Rieger, in *Pharmaceutical Dosage Forms*, Marcel Dekker, Inc., New York, NY, 1988, p. 285). Penetration

- 25 Enhancers

[00134] In one embodiment, the present invention employs various penetration enhancers to effect the efficient delivery of nucleic acids particularly oligonucleotides, to the skin of animals. Most drugs are present in solution in both ionized and nonionized forms. However,

30 usually only lipid soluble or lipophilic drugs readily cross cell membranes. It has been discovered that even non-lipophilic drugs may cross cell membranes if the membrane to be crossed is treated with a penetration enhancer. In addition to aiding the diffusion of non-

lipophilic drugs across cell membranes, penetration enhancers also enhance the permeability of lipophilic drugs.

[00135] Penetration enhancers may be classified as belonging to one of five broad categories, i.e., surfactants, fatty acids, bile salts, chelating agents, and non-chelating nonsurfactants (Lee et al., *Critical Reviews in Therapeutic Drug Carrier Systems*, 1991, p.92). Each of the above mentioned classes of penetration enhancers are described below in greater detail.

[00136] Surfactants: In connection with the present invention, surfactants (or "surface-active agents") are chemical entities which, when dissolved in an aqueous solution, reduce the surface tension of the solution or the interfacial tension between the aqueous solution and another liquid, with the result that absorption of oligonucleotides through the mucosa is enhanced. In addition to bile salts and fatty acids, these penetration enhancers include, for example, sodium lauryl sulfate, polyoxyethylene-9-lauryl ether and polyoxyethylene-20-cetyl ether) (Lee et al., *Critical Reviews in Therapeutic Drug Carrier Systems*, 1991, p.92); and perfluorochemical emulsions, such as FC-43. Takahashi et al., *J. Pharm. Pharmacol.*, 1988, 40, 252).

[00137] Fatty acids: Various fatty acids and their derivatives which act as penetration enhancers include, for example, oleic acid, lauric acid, capric acid (n-decanoic acid), myristic acid, palmitic acid, stearic acid, linoleic acid, linolenic acid, dicaprinate, tricaprinate, monoolein (1-monooleoyl-rac-glycerol), dilaurin, caprylic acid, arachidonic acid, glycerol 1-monocaprate, 1-dodecylazacycloheptan-2-one, acylcarnitines, acylcholines, C₁₋₁₀ alkyl esters thereof (e.g., methyl, isopropyl and t-butyl), and mono- and di-glycerides thereof (i.e., oleate, laurate, caprate, myristate, palmitate, stearate, linoleate, etc.) (Lee et al., *Critical Reviews in Therapeutic Drug Carrier Systems*, 1991, p.92; Muranishi, *Critical Reviews in Therapeutic Drug Carrier Systems*, 1990, 7, 1-33; El Hariri et al., *J. Pharm. Pharmacol.*, 1992, 44, 651-654).

[00138] Bile salts: The physiological role of bile includes the facilitation of dispersion and absorption of lipids and fat-soluble

vitamins (Brunton, Chapter 38 in: Goodman & Gilman's *The Pharmacological Basis of Therapeutics*, 9th Ed., Hardman et al. Eds. McGraw-Hill, New York, 1996, pp. 934-935). Various natural bile salts, and their synthetic derivatives, act as penetration enhancers. Thus the

5 term "bile salts" includes any of the naturally occurring components of bile as well as any of their synthetic derivatives. The bile salts of the invention include, for example, cholic acid (or its pharmaceutically acceptable sodium salt, sodium cholate), dehydrocholic acid (sodium dehydrocholate), deoxycholic acid (sodium deoxycholate), glucolic acid (sodium glucolate), glycholic acid (sodium glycocholate),

10 glycodeoxycholic acid (sodium glycodeoxycholate), taurocholic acid (sodium taurocholate), taurodeoxycholic acid (sodium taurodeoxycholate), chenodeoxycholic acid (sodium chenodeoxycholate), ursodeoxycholic acid (UDCA), sodium tauro-

15 24,25-dihydro-fusidate (STDHF), sodium glycodihydrofusidate and polyoxyethylene-9-lauryl ether (POE) (Lee et al., *Critical Reviews in Therapeutic Drug Carrier Systems*, 1991, page 92; Swinyard, Chapter 39 In: *Remington's Pharmaceutical Sciences*, 18th Ed., Gennaro, ed., Mack Publishing Co., Easton, PA, 1990, pages 782-783; Muranishi, *Critical Reviews in Therapeutic Drug Carrier Systems*, 1990, 7, 1-33; Yamamoto et al., *J. Pharm. Exp. Ther.*, 1992, 263, 25; Yamashita et al., *J. Pharm. Sci.*, 1990, 79, 579-583).

[00139] Chelating Agents: Chelating agents, as used in connection with the present invention, can be defined as compounds that remove

25 metallic ions from solution by forming complexes therewith, with the result that absorption of oligonucleotides through the mucosa is enhanced. With regards to their use as penetration enhancers in the present invention, chelating agents have the added advantage of also serving as DNase inhibitors, as most characterized DNA nucleases

30 require a divalent metal ion for catalysis and are thus inhibited by chelating agents (Jarrett, *J. Chromatogr.*, 1993, 618, 315-339). Chelating agents of the invention include but are not limited to disodium. ethylenediaminetetraacetate (EDTA), citric acid, salicylates

(e.g., sodium salicylate, 5-methoxysalicylate and homovanilate), N-acyl derivatives of collagen, laureth-9, and N-amino acyl derivatives of beta-diketones (enamines)(Lee et al., *Critical Reviews in Therapeutic Drug Carrier Systems*, 1991, page 92; Muranishi, *Critical Reviews in*

5 *Therapeutic Drug Carrier Systems*, 1990, 7, 1-33; Buur et al., *J. Control Rel.*, 1990, 14, 43-51).

[00140] Non-chelating non-surfactants: As used herein, nonchelating non-surfactant penetration enhancing compounds can be defined as compounds that demonstrate insignificant activity as chelating agents or
10 as surfactants but that nonetheless enhance absorption of oligonucleotides through the alimentary mucosa (Muranishi, *Critical Reviews in Therapeutic Drug Carrier Systems*, 1990, 7, 1-33). This class of penetration enhancers includes, for example, unsaturated cyclic ureas, 1-alkyl- and 1-alkenylazacyclo-alkanone derivatives (Lee et al., *Critical*
15 *Reviews in Therapeutic Drug Carrier Systems*, 1991, page 92); and non-steroidal anti-inflammatory agents such as diclofenac sodium, indomethacin, and phenylbutazone (Yamashita et al., *J. Pharm. Pharmacol.*, 1987, 39, 621-626).

[00141] Agents that enhance uptake of oligonucleotides at the cellular
20 level may also be added to the pharmaceutical and other compositions of the present invention. For example, cationic lipids, such as lipofectin (Junichi et al, U.S. Patent No. 5,705,188), cationic glycerol derivatives, and polycationic molecules, such as polylysine (Lollo et al., PCT Application WO 97/30731), are also known to enhance the cellular
25 uptake of oligonucleotides.

[00142] Other agents may be utilized to enhance the penetration of the administered nucleic acids, including glycols such as ethylene glycol and propylene glycol, pyrrols such as 2-pyrrol, azones, and terpenes such as limonene and menthone.

30 Carriers

[00143] Certain compositions of the present invention also incorporate carrier compounds in the formulation. As used herein, "carrier compound" or "carrier" can refer to a nucleic acid, or analog

thereof, which is inert (i.e., does not possess biological activity per se) but is recognized as a nucleic acid by in vivo processes that reduce the bioavailability of a nucleic acid having biological activity by, for example, degrading the biologically active nucleic acid or promoting its removal from circulation. The coadministration of a nucleic acid and a carrier compound, typically with an excess of the latter substance, can result in a substantial reduction of the amount of nucleic acid recovered in the liver, kidney or other extracirculatory reservoirs, presumably due to competition between the carrier compound and the nucleic acid for a common receptor. For example, the recovery of a partially phosphorothioate oligonucleotide in hepatic tissue can be reduced when it is coadministered with polyinosinic acid, dextran sulfate, polycytidic acid or 4-acetamido-4-isothiocyano-stilbene-2,2'-disulfonic acid (Miyao et al., *Antisense Res. Dev.*, 1995, 5, 115-121; Takakura et al., *Antisense & Nucl. Acid Drug Dev.*, 1996, 6, 177-183).

Excipients

[00144] In contrast to a carrier compound, a "pharmaceutical carrier" or "excipient" is a pharmaceutically acceptable solvent, suspending agent or any other pharmacologically inert vehicle for delivering one or more nucleic acids to an animal. The excipient may be liquid or solid and is selected, with the planned manner of administration in mind, so as to provide for the desired bulk, consistency, etc., when combined with a nucleic acid and the other components of a given pharmaceutical composition. Typical pharmaceutical carriers include, but are not limited to, binding agents (e.g., pregelatinized maize starch, polyvinylpyrrolidone or hydroxypropyl methylcellulose, etc.); fillers (e.g., lactose and other sugars, microcrystalline cellulose, pectin, gelatin, calcium sulfate, ethyl cellulose, polyacrylates or calcium hydrogen phosphate, etc.); lubricants (e.g., magnesium stearate, talc, silica, colloidal silicon dioxide, stearic acid, metallic stearates, hydrogenated vegetable oils, corn starch, polyethylene glycols, sodium benzoate, sodium acetate, etc.); disintegrants (e.g., starch, sodium starch glycolate, etc.); and wetting agents (e.g., sodium lauryl sulphate, etc.).

[00145] Pharmaceutically acceptable organic or inorganic excipient suitable for non-parenteral administration, which does not deleteriously react with nucleic acids, can also be used to formulate the compositions of the present invention. Suitable pharmaceutically acceptable carriers
5 include, but are not limited to, water, salt solutions, alcohols, polyethylene glycols, gelatin, lactose, amylose, magnesium stearate, talc, silicic acid, viscous paraffin, hydroxymethylcellulose, polyvinylpyrrolidone and the like.

[00146] Formulations for topical administration of nucleic acids may
10 include sterile and non-sterile aqueous solutions, non-aqueous solutions in common solvents such as alcohols, or solutions of the nucleic acids in liquid or solid oil bases. The solutions may also contain buffers, diluents, and other suitable additives. Pharmaceutically acceptable organic or inorganic excipients suitable for non-parenteral
15 administration, which do not deleteriously react with nucleic acids, can be used.

[00147] Suitable pharmaceutically acceptable excipients include, but are not limited to, water, salt solutions, alcohol, polyethylene glycols, gelatin, lactose, amylose, magnesium stearate, talc, silicic acid, viscous
20 paraffin, hydroxymethylcellulose, polyvinylpyrrolidone and the like.
Other Components

[00148] The compositions of the present invention may additionally contain other adjunct components conventionally found in pharmaceutical compositions, at their art-established usage levels. Thus,
25 for example, the compositions may contain additional, compatible, pharmaceutically-active materials such as, for example, antipruritics, astringents, local anesthetics or anti-inflammatory agents, or may contain additional materials useful in physically formulating various dosage forms of the compositions of the present invention, such as dyes,
30 flavoring agents, preservatives, antioxidants, opacifiers, thickening agents and stabilizers. However, such materials, when added, should not unduly interfere with the biological activities of the components of the compositions of the present invention. The formulations can be sterilized

and, if desired, mixed with auxiliary agents, e.g., lubricants, preservatives, stabilizers, wetting agents, emulsifiers, salts for influencing osmotic pressure, buffers, colorings, flavorings and/or aromatic substances and the like which do not deleteriously interact with the nucleic acid(s) of the formulation.

[00149] Aqueous suspensions may contain substances, which increase the viscosity of the suspension including, for example, sodium carboxymethylcellulose, sorbitol, and/or dextran. The suspension may also contain stabilizers.

[00150] Certain embodiments of the invention provide pharmaceutical compositions containing (a) one or more antisense compounds and (b) one or more other chemotherapeutic agents which function by a non-antisense mechanism. Examples of such chemotherapeutic agents include, but are not limited to, anticancer drugs such as daunorubicin, dactinomycin, doxorubicin, bleomycin, mitomycin, nitrogen mustard, chlorambucil, melphalan, cyclophosphamide, 6-mercaptopurine, 6-thioguanine, cytarabine (CA), 5-fluorouracil (5-FU), floxuridine (5-FUdR), methotrexate (MTX), colchicine, vincristine, vinblastine, etoposide, teniposide, cisplatin and diethylstilbestrol (DES). See, generally, *The Merck Manual of Diagnosis and Therapy*, 15th Ed., Berkow et al., eds., 1987, Rahway, N.J., pages 1206-1228). Anti-inflammatory drugs, including but not limited to nonsteroidal anti-inflammatory drugs and corticosteroids, and antiviral drugs, including but not limited to ribivirin, vidarabine, acyclovir and ganciclovir, may also be combined in compositions of the invention. See, generally, *The Merck Manual of Diagnosis and Therapy*, 15th Ed., Berkow et al., eds., 1987, Rahway, N.J., pages 2499-2506 and 46-49, respectively). other non-antisense chemotherapeutic agents are also within the scope of this invention. Two or more combined compounds may be used together or sequentially.

[00151] In another related embodiment, compositions of the invention may contain one or more antisense compounds, particularly oligonucleotides, targeted to a first nucleic acid and one or more

additional antisense compounds targeted to a second nucleic acid target.

Numerous examples of antisense compounds are known in the art. Two or more combined compounds may be used together or sequentially.

- [00152] The formulation of therapeutic compositions and their subsequent administration is believed to be within the skill of those in the art. Dosing is dependent on severity and responsiveness of the disease state to be treated, with the course of treatment lasting from several days to several months, or until a cure is effected or a diminution of the disease state is achieved. Optimal dosing schedules can be calculated from measurements of drug accumulation in the body of the patient. Persons of ordinary skill can easily determine optimum dosages, dosing methodologies and repetition rates. Optimum dosages may vary depending on the relative potency of individual oligonucleotides, and can generally be estimated based on EC₅₀s found to be effective in in vitro and in vivo animal models. In general, dosage is from 0.01 µg to 100 g per kg of body weight, and may be given once or more daily, weekly, monthly or yearly, or even once every 2 to 20 years. Persons of ordinary skill in the art can easily estimate repetition rates for dosing based on measured residence times and concentrations of the drug in bodily fluids or tissues. Following successful treatment, it may be desirable to have the patient undergo maintenance therapy to prevent the recurrence of the disease state, wherein the oligonucleotide is administered in maintenance doses, ranging from 0.01 µg to 100 g per kg of body weight, once or more daily, to once every 20 years.
- [00153] While the present invention has been described with specificity in accordance with certain of its preferred embodiments, the following examples serve only to illustrate the invention and are not intended to limit the same.

EXAMPLES

30

Example 1

Nucleoside Phosphoramidites for Oligonucleotide Synthesis Deoxy and 2'-alkoxy amidites

[00154] 2'-Deoxy and 2'-methoxy beta-cyanoethyl-diisopropyl phosphoramidites are available from commercial sources (e.g. Chemgenes, Needham MA or Glen Research, Inc. Sterling VA). Other 2'-O-alkoxy substituted nucleoside amidites are prepared as described in U.S. Patent 5,506,351, herein incorporated by reference. For oligonucleotides synthesized using 2'-alkoxy amidites, the standard cycle for unmodified oligonucleotides is utilized, except the wait step after pulse delivery of tetrazole and base is increased to 360 seconds.

[00155] Oligonucleotides containing 5-methyl-2'-deoxycytidine (5-Me-C) nucleotides are synthesized according to published methods [Sanghvi, et. al., *Nucleic Acids Research*, 1993, 21, 3197-3203] using commercially available phosphoramidites (Glen Research, Sterling VA or ChemGenes, Needham MA).

2'-Fluoro amidites

2'-Fluorodeoxyadenosine amidites

[00156] 2'-fluoro oligonucleotides are synthesized as described previously [Kawasaki, et. al., *J. Med. Chem.*, 1993, 36, 831-841] and United States patent 5,670,633, herein incorporated by reference. Briefly, the protected nucleoside N6-benzoyl-2'-deoxy-2'-fluoroadenosine is synthesized utilizing commercially available 9-beta-D-arabinofuranosyladenine as starting material and by modifying literature procedures whereby the 2'-alpha-fluoro atom is introduced by a S_N2-displacement of a 2'-beta-trityl group. Thus N6-benzoyl-9-beta-D-arabinofuranosyladenine is selectively protected in moderate yield as the 3',5'-ditetrahydropyranyl (THP) intermediate. Deprotection of the THP and N6-benzoyl groups is accomplished using standard methodologies and standard methods are used to obtain the 5'-dimethoxytrityl-(DMT) and 5'-DMT-3'-phosphoramidite intermediates.

2'-Fluorodeoxyguanosine

[00157] The synthesis of 2'-deoxy-2'-fluoroguanosine is accomplished using tetraisopropyl-disiloxanyl (TPDS) protected 9-beta-D-arabinofuranosylguanine as starting material, and conversion to the intermediate diisobutyrylarabinofuranosylguanosine. Deprotection of the

TPDS group is followed by protection of the hydroxyl group with THP to give diisobutryl di-THP protected arabinofuranosylguanine.

Selective O-deacylation and triflation is followed by treatment of the crude product with fluoride, then deprotection of the THP groups.

- 5 Standard methodologies are used to obtain the 5'-DMT- and 5'-DMT-3'-phosphoramidites.

2'-Fluorouridine

- [00158] Synthesis of 2'-deoxy-2'-fluorouridine is accomplished by the modification of a literature procedure in which 2,2'-anhydro-1-beta-
10 D-arabinofuranosyluracil is treated with 70% hydrogen fluoride-pyridine. Standard procedures are used to obtain the 5'-DMT and 5'-DMT-3'-phosphoramidites.

2'-Fluorodeoxycytidine

- [00159] 2'-deoxy-2'-fluorocytidine is synthesized via amination of
15 2'-deoxy-2'-fluorouridine, followed by selective protection to give N4-benzoyl-2'-deoxy-2'-fluorocytidine. Standard procedures are used to obtain the 5'-DMT and 5'-DMT-3'-phosphoramidites.

2'-O-(2-Methoxyethyl) modified amidites

- [00160] 2'-O-Methoxyethyl-substituted nucleoside amidites are
20 prepared as follows, or alternatively, as per the methods of Martin, P., *Helvetica Chimica Acta*, 1995, 78, 486-504.

2,2'-Anhydro[l-(beta-D-arabinofuranosyl)-5-methyluridine]

- [00161] 5-Methyluridine (ribosylthymine, commercially available through Yamasa, Choshi, Japan) (72.0 g, 0.279 M), diphenylcarbonate
25 (90.0 g, 0.420 M) and sodium bicarbonate (2.0 g, 0.024 M) are added to DMF (300 mL). The mixture is heated to reflux, with stirring, allowing the evolved carbon dioxide gas to be released in a controlled manner. After 1 hour, the slightly darkened solution is concentrated under reduced pressure. The resulting syrup is poured into diethylether (2.5 L),
30 with stirring. The product formed a gum. The ether is decanted and the residue is dissolved in a minimum amount of methanol (ca. 400 mL). The solution is poured into fresh ether (2.5 L) to yield a stiff gum. The ether is decanted and the gum is dried in a vacuum oven (60°C at 1 mm

Hg for 24 h) to give a solid that is crushed to a light tan powder. The material is used as is for further reactions (or it can be purified further by column chromatography using a gradient of methanol in ethyl acetate (10-25%) to give a white solid.

5 **2'-O-Methoxyethyl-5-methyluridine**

[00162] 2,2'-Anhydro-5-methyluridine (195 g, 0.81 M), tris(2-methoxyethyl)borate (231 g, 0.98 M) and 2-methoxyethanol (1.2 L) are added to a 2 L stainless steel pressure vessel and placed in a pre-heated oil bath at 160°C. After heating for 48 hours at 155-160°C, the vessel is
10 opened and the solution evaporated to dryness and triturated with MeOH (200 mL). The residue is suspended in hot acetone (1 L). The insoluble salts are filtered, washed with acetone (150 mL) and the filtrate evaporated. The residue (280 g) is dissolved in CH₃CN (600 mL) and evaporated. A silica gel column (3 kg) is packed in CH₂Cl₂ /acetone
15 /MeOH (20:5:3) containing 0.5% Et₃NH. The residue is dissolved in CH₂Cl₂ (250 mL) and adsorbed onto silica (150 g) prior to loading onto the column. The product is eluted with the packing solvent to give the title product. Additional material can be obtained by reworking impure fractions.

20 **2'-O-Methoxyethyl-5'-O-dimethoxytrityl-5-methyluridine**

[00163] 2'-O-Methoxyethyl-5-methyluridine (160 g, 0.506 M) is co-evaporated with pyridine (250 mL) and the dried residue dissolved in pyridine (1.3 L). A first aliquot of dimethoxytrityl chloride (94.3 g, 0.278 M) is added and the mixture stirred at room temperature for one
25 hour. A second aliquot of dimethoxytrityl chloride (94.3 g, 0.278 M) is added and the reaction stirred for an additional one hour. Methanol (170 mL) is then added to stop the reaction. The solvent is evaporated and triturated with CH₃CN (200 mL) The residue is dissolved in CHCl₃ (1.5 L) and extracted with 2x500 mL of saturated NaHCO₃ and 2x500 mL of
30 saturated NaCl. The organic phase is dried over Na₂SO₄, filtered, and evaporated. The residue is purified on a 3.5 kg silica gel column, packed and eluted with EtOAc/hexane/ acetone (5:5:1) containing 0-5% Et₃NH. The pure fractions are evaporated to give the title product.

3'-O-Acetyl-2'-O-methoxyethyl-5'-O-dimethoxytrityl-5-methyluridine

[00164] 2'-O-Methoxyethyl-5'-O-dimethoxytrityl-5-methyluridine (106 g, 0.167 M), DMF/pyridine (750 mL of a 3:1 mixture prepared from 562 mL of DMF and 188 mL of pyridine) and acetic anhydride (24.38 mL, 0.258 M) are combined and stirred at room temperature for 24 hours. The reaction is monitored by TLC by first quenching the TLC sample with the addition of MeOH. Upon completion of the reaction, as judged by TLC, MeOH (50 mL) is added and the mixture evaporated at 35°C. The residue is dissolved in CHCl₃ (800 mL) and extracted with 2x200 mL of saturated sodium bicarbonate and 2x200 mL of saturated NaCl. The water layers are back extracted with 200 mL of CHCl₃. The combined organics are dried with sodium sulfate and evaporated to a residue. The residue is purified on a 3.5 kg silica gel column and eluted using EtOAc/hexane(4:1). Pure product fractions are evaporated to yield the title compounds.

3'-O-Acetyl-2'-O-methoxyethyl-5'-O-dimethoxytrityl-5-methyl-4-triazoleuridine

[00165] A first solution is prepared by dissolving 3'-O-acetyl-2'-O-methoxyethyl-5'-O-dimethoxytrityl-5-methyluridine (96 g, 0.144 M) in CH₃CN (700 mL) and set aside. Triethylamine (189 mL, 1.44 M) is added to a solution of triazole (90 g, 1.3 M) in CH₃CN (1 L), cooled to -5°C and stirred for 0.5 h using an overhead stirrer. POCl₃ is added dropwise, over a 30 minute period, to the stirred solution maintained at 0-10°C, and the resulting mixture stirred for an additional 2 hours. The first solution is added dropwise, over a 45 minute period, to the latter solution. The resulting reaction mixture is stored overnight in a cold room. Salts are filtered from the reaction mixture and the solution is evaporated. The residue is dissolved in EtOAc (1 L) and the insoluble solids are removed by filtration. The filtrate is washed with 1x300 mL of NaHCO₃ and 2x300 mL of saturated NaCl, dried over sodium sulfate and evaporated. The residue is triturated with EtOAc to give the title compound.

2'-O-Methoxyethyl-5'-O-dimethoxytrityl-5-methylcytidine

[00166] A solution of 3'-O-acetyl-2'-O-methoxyethyl-5'-O-dimethoxytrityl-5-methyl-4-triazoleuridine (103 g, 0.141 M) in dioxane (500 mL) and NH₄OH (30 mL) is stirred at room temperature for 2 hours. The dioxane solution is evaporated and the residue azeotroped with MeOH (2x200 mL). The residue is dissolved in MeOH (300 mL) and transferred to a 2-liter stainless steel pressure vessel. MeOH (400 mL) saturated with NH₃ gas is added and the vessel heated to 100°C for 2 hours (TLC showed complete conversion). The vessel contents are evaporated to dryness and the residue is dissolved in EtOAc (500 mL) and washed once with saturated NaCl (200 mL). The organics are dried over sodium sulfate and the solvent is evaporated to give the title compound.

N4-Benzoyl-2'-O-methoxyethyl-5'-O-dimethoxytrityl-5-methylcytidine

[00167] 2'-O-Methoxyethyl-5'-O-dimethoxytrityl-5-methylcytidine (85 g, 0.134 M) is dissolved in DMF (800 mL) and benzoic anhydride (37.2 g, 0.165 M) is added with stirring. After stirring for 3 hours, TLC showed the reaction to be approximately 95% complete. The solvent is evaporated and the residue azeotroped with MeOH (200 mL). The residue is dissolved in CHCl₃ (700 mL) and extracted with saturated NaHCO₃ (2x300 mL) and saturated NaCl (2x300 mL), dried over MgSO₄ and evaporated to give a residue. The residue is chromatographed on a 1.5 kg silica column using EtOAc/hexane (1:1) containing 0-5% Et₃NH as the eluting solvent. The pure product fractions are evaporated to give the title compound.

N4-Benzoyl-2'-O-methoxyethyl-5'-O-dimethoxytrityl-5-methylcytidine-3'-amidite

[00168] N4-Benzoyl-2'-O-methoxyethyl-5'-O-dimethoxytrityl-5-methylcytidine (74 g, 0.10 M) is dissolved in CH₂Cl₂ (1 L). Tetrazole diisopropylamine (7.1 g) and 2-cyanoethoxy-tetra(isopropyl)phosphite (40.5 mL, 0.123 M) are added with stirring, under a nitrogen atmosphere. The resulting mixture is stirred for 20 hours at room

- temperature (TLC showed the reaction to be 95% complete). The reaction mixture is extracted with saturated NaHCO₃ (1x300 mL) and saturated NaCl (3x300 mL). The aqueous washes are back-extracted with CH₂Cl₂ (300 mL), and the extracts are combined, dried over
- 5 MgSO₄, and concentrated. The residue obtained is chromatographed on a 1.5 kg silica column using EtOAc/hexane (3:1) as the eluting solvent. The pure fractions were combined to give the title compound.
- 2'-O-(Aminooxyethyl) nucleoside amidites and 2'-O-(dimethylaminooxyethyl) nucleoside amidites**
- 10 **2'-(Dimethylaminooxyethoxy) nucleoside amidites**
- [00169] 2'-(Dimethylaminooxyethoxy) nucleoside amidites [also known in the art as 2'-O-(dimethylaminooxyethyl) nucleoside amidites] are prepared as described in the following paragraphs. Adenosine, cytidine and guanosine nucleoside amidites are prepared similarly to the
- 15 thymidine (5-methyluridine) except the exocyclic amines are protected with a benzoyl moiety in the case of adenosine and cytidine and with isobutyryl in the case of guanosine.
- 5'-O-tert-Butyldiphenylsilyl -O² -2'-anhydro-5-methyluridine**
- [00170] O² -2'-anhydro-5-methyluridine (Pro. Bio. Sint., Varese,
- 20 Italy, 100.0g, 0.4'6 mmol), dimethylaminopyridine (0.66g, 0.013eq, 0.0054mmol) are dissolved in dry pyridine (500 ml) at ambient temperature under an argon atmosphere and with mechanical stirring. tert-Butyldiphenylchlorosilane (125.8g, 119.0mL, 1.1eq, 0.458mmol) is added in one portion. The reaction is stirred for 16 h at ambient
- 25 temperature. TLC (R_f 0.22, ethyl acetate) indicated a complete reaction. The solution is concentrated under reduced pressure to a thick oil. This is partitioned between dichloromethane (1 L) and saturated sodium bicarbonate (2xl L) and brine (1 L). The organic layer is dried over sodium sulfate and concentrated under reduced pressure to a thick oil.
- 30 The oil is dissolved in a 1:1 mixture of ethyl acetate and ethyl ether (600mL) and the solution is cooled to -10°C. The resulting crystalline product is collected by filtration, washed with ethyl ether (3x200 mL), and dried (40°C, 1mm Hg, 24 h) to a white solid

5'-O-tert-Butyldiphenylsilyl-2'-O-(2-hydroxyethyl)-5-methyluridine

[00171] In a 2 L stainless steel, unstirred pressure reactor is added borane in tetrahydrofuran (1.0 M, 2.0 eq, 622 mL). In the fume hood and with manual stirring, ethylene glycol (350 mL, excess) is added
5 cautiously at first until the evolution of hydrogen gas subsides. 5'-O-tert-Butyldiphenylsilyl-O²-2'-anhydro-5-methyluridine (149 g, 0.3¹ mol) and sodium bicarbonate (0.074 g, 0.003 eq) are added with manual stirring. The reactor is sealed and heated in an oil bath until an internal temperature of 160°C is reached and then maintained for 16 h (pressure
10 < 100 psig). The reaction vessel is cooled to ambient and opened. TLC (R_f 0.67 for desired product and R_f 0.82 for ara-T side product, ethyl acetate) indicated about 70% conversion to the product. In order to avoid additional side product formation, the reaction is stopped, concentrated under reduced pressure (10 to 1mm, Hg) in a warm water bath (40-
15 100°C) with the more extreme conditions used to remove the ethylene glycol. [Alternatively, once the low boiling solvent is gone, the remaining solution can be partitioned between ethyl acetate and water. The product will be in the organic phase.] The residue is purified by column chromatography (2kg silica gel, ethyl acetate-hexanes gradient
20 1:1 to 4:1). The appropriate fractions are combined, stripped, and dried to product as a white crisp foam, contaminated starting material, and pure reusable starting material.

2'-O-([2-phthalimidoxy)ethyl]-5'-t-butyldiphenylsilyl-5-methyluridine

[00172] 5'-O-tert-Butyldiphenylsilyl-2'-O-(2-hydroxyethyl)-5-methyluridine (20g, 36.98mmol) is mixed with triphenylphosphine (11.63g, 44.36mmol) and N-hydroxyphthalimide (7.24g, 44.36mmol). It is then dried over P₂O₅ under high vacuum for two days at 40°C. The reaction mixture is flushed with argon and dry THF (369.8mL, Aldrich,
30 sure seal bottle) is added to get a clear solution. Diethyl-azodicarboxylate (6.98mL, 44.36mmol) is added dropwise to the reaction mixture. The rate of addition is maintained such that resulting deep red coloration is just discharged before adding the next drop. After

the addition is complete, the reaction is stirred for 4 hrs. By that time TLC showed the completion of the reaction (ethylacetate:hexane, 60:40). The solvent is evaporated in vacuum. Residue obtained is placed on a flash column and eluted with ethyl acetate:hexane (60:40), to get
5 2'-O-([2-phthalimidooxy)ethyl]-5'-t-butylidiphenylsilyl-5-methyluridine as white foam.

5'-O-tert-butylidiphenylsilyl-2'-O-[(2-formadoximinooxy)ethyl]-5-methyluridine

[00173] 2'-O-([2-phthalimidooxy)ethyl]-5'-t-butylidiphenylsilyl-5-methyluridine (3.1g, 4.5mmol) is dissolved in dry CH₂Cl₂ (4.5mL) and methylhydrazine (300mL, 4.64mmol) is added dropwise at -10°C to 0°C. After 1 h the mixture is filtered, the filtrate is washed with ice cold CH₂Cl₂ and the combined organic phase is washed with water, brine and dried over anhydrous Na₂SO₄. The solution is concentrated to get 2'-
10 O(aminooxyethyl) thymidine, which is then dissolved in MeOH (67.5mL). To this formaldehyde (20% aqueous solution, w/w, 1.1 eq.) is added and the resulting mixture is stirred for 1 h. Solvent is removed under vacuum; residue chromatographed to get 5'-O-tert-butylidiphenylsilyl-2'-O-[(2-formadoximinooxy) ethyl]-5-methyluridine
15 as white foam.

5'-O-tert-Butylidiphenylsilyl-2'-O-[N,N-dimethylaminooxyethyl]-5-methyluridine

[00174] 5'-O-tert-butylidiphenylsilyl-2'-O-[(2-formadoximinooxy)ethyl]-5-methyluridine (1.77g, 3.12mmol) is
25 dissolved in a solution of 1M pyridinium p-toluenesulfonate (PPTS) in dry MeOH (30.6mL). Sodium cyanoborohydride (0.39g, 6.13mmol) is added to this solution at 10°C under inert atmosphere. The reaction mixture is stirred for 10 minutes at 10°C. After that the reaction vessel is removed from the ice bath and stirred at room temperature for 2 h, the
30 reaction monitored by TLC (5% MeOH in CH₂Cl₂). Aqueous NaHCO₃ solution (5%, 10mL) is added and extracted with ethyl acetate (2x20mL). Ethyl acetate phase is dried over anhydrous Na₂SO₄, evaporated to dryness. Residue is dissolved in a solution of 1M PPTS in

MeOH (30.6mL). Formaldehyde (20% w/w, 30mL, 3.37mmol) is added and the reaction mixture is stirred at room temperature for 10 minutes. Reaction mixture cooled to 10°C in an ice bath, sodium cyanoborohydride (0.39g, 6.13mmol) is added, and reaction mixture stirred at 10°C for 10 minutes. After 10 minutes, the reaction mixture is removed from the ice bath and stirred at room temperature for 2 hrs. To the reaction mixture 5% NaHCO₃ (25mL) solution is added and extracted with ethyl acetate (2x25mL). Ethyl acetate layer is dried over anhydrous Na₂SO₄ and evaporated to dryness. The residue obtained is purified by flash column chromatography and eluted with 5% MeOH in CH₂Cl₂ to get 5'-O-tertbutyldiphenylsilyl-2'-O-[N,N-dimethylaminoxyethyl]-5-methyluridine as a white foam.

2'-O-(dimethylaminoxyethyl)-5-methyluridine

[00175] Triethylamine trihydrofluoride (3.91mL, 24.0mmol) is dissolved in dry THF and triethylamine (1.67mL, 12mmol, dry, kept over KOH). This mixture of triethylamine-2HF is then added to 5'-O-tert-butylidiphenylsilyl-2'-O-[N,N-dimethylaminoxyethyl]-5-methyluridine (1.40g, 2.4mmol) and stirred at room temperature for 24 hrs. Reaction is monitored by TLC (5% MeOH in CH₂Cl₂). Solvent is removed under vacuum and the residue placed on a flash column and eluted with 10% MeOH in CH₂Cl₂ to get 2'-O-(dimethylaminoxyethyl)-5-methyluridine.

5'-O-DMT-2'-O-(dimethylaminoxyethyl)-5-methyluridine

[00176] 2'-O-(dimethylaminoxyethyl)-5-methyluridine (750mg, 2.17mmol) is dried over P₂O₅ under high vacuum overnight at 40°C. It is then co-evaporated with anhydrous pyridine (20mL). The residue obtained is dissolved in pyridine (11 mL) under argon atmosphere. 4-dimethylaminopyridine (26.5mg, 2.60mmol), 4,4'-dimethoxytrityl chloride (880mg, 2.60mmol) is added to the mixture and the reaction mixture is stirred at room temperature until all of the starting material disappeared. Pyridine is removed under vacuum and the residue chromatographed and eluted with 10% MeOH in CH₂Cl₂ (containing a

few drops of pyridine) to get 5'-O-DMT-2'-O-(dimethylamino-oxyethyl)-5-methyluridine.

5'-O-DMT-2'-O-(2-N,N-dimethylaminooxyethyl)-5-methyluridine-3'-[(2-cyanoethyl)-N,N-diisopropylphosphoramidite]

- 5 [00177] 5'-O-DMT-2'-O-(dimethylaminooxyethyl)-5-methyluridine (1.08g, 1.67mmol) is co-evaporated with toluene (20mL). To the residue N,N-diisopropylamine tetrazonide (0.29g, 1.67mmol) is added and dried over P2O, under high vacuum overnight at 40°C. Then the reaction mixture is dissolved in anhydrous acetonitrile (8.4mL) and 2-
- 10 cyanoethyl-N,N,N',N'-tetraisopropylphosphoramidite (2.12mL, 6.08mmol) is added. The reaction mixture is stirred at ambient temperature for 4 hrs under inert atmosphere. The progress of the reaction is monitored by TLC (hexane:ethyl acetate 1:1). The solvent is evaporated, then the residue is dissolved in ethyl acetate (70mL) and
- 15 washed with 5% aqueous NaHCO₃ (40mL). Ethyl acetate layer is dried over anhydrous Na₂SO₄ and concentrated. Residue obtained is chromatographed (ethyl acetate as eluent) to get 5'-O-DMT-2'-O-(2-N,N-dimethylaminooxyethyl)-5-methyluridine-3'-[(2-cyanoethyl)-N,N-diisopropylphosphoramidite] as a foam.

20 **2'-(Aminooxyethoxy) nucleoside amidites**

[00178] 2'-(Aminooxyethoxy) nucleoside amidites [also known in the art as 2'-O-(aminooxyethyl) nucleoside amidites] are prepared as described in the following paragraphs. Adenosine, cytidine and thymidine nucleoside amidites are prepared similarly.

25 **N2-isobutyryl-6-O-diphenylcarbamoyl-2'-O-(2-ethylacetyl)-5'-O-(4,4'-dimethoxytrityl)guanosine-3'-[(2-cyanoethyl)-N,N-diisopropylphosphoramidite]**

- [00179] The 2'-O-aminooxyethyl guanosine analog may be obtained by selective 2'-O-alkylation of diaminopurine riboside. Multigram
- 30 quantities of diaminopurine riboside may be purchased from Schering AG (Berlin) to provide 2'-O-(2-ethylacetyl) diaminopurine riboside along with a minor amount of the 3'-O-isomer. 2'-O-(2-ethylacetyl) diaminopurine riboside may be resolved and converted to 2'-O-

(2ethylacetyl)guanosine by treatment with adenosine deaminase.
(McGee, D. P. C., Cook, P. D., Guinosso, C. J., WO 94/02501 A1
940203.) Standard protection procedures should afford 2'-O-(2-
ethylacetyl)-5'-O-(4,4'-dimethoxytrityl)guanosine and 2-N-isobutyryl-6-
5 O-diphenylcarbamoyl-2'-O-(2-ethylacetyl)-5'-O-(4,4'-
dimethoxytrityl)guanosine which may be reduced to provide 2-N-
isobutyryl-6-O-diphenylcarbamoyl-2'-O-(2-ethylacetyl)-5'-O-(4,4'-
dimethoxytrityl)guanosine. As before the hydroxyl group may be
displaced by N-hydroxyphthalimide via a Mitsunobu reaction, and the
10 protected nucleoside may phosphitylated as usual to yield 2-N-
isobutyryl-6-O-diphenylcarbamoyl-2'-O-(2-ethylacetyl)-5'-O-(4,4'-
dimethoxytrityl)guanosine-3'-[(2-cyanoethyl)-N,N-
diisopropylphosphoramidite].

2'-dimethylaminoethoxyethoxy (2'-DMAEOE) nucleoside amidites

15 **[00180]** 2'-dimethylaminoethoxyethoxy nucleoside amidites (also
known in the art as 2'-O-dimethylaminoethoxyethyl, i.e., 2'-O-CH₂-O-
CH₂-N(CH₂)₂, or 2'-DMAEOE nucleoside amidites) are prepared as
follows. Other nucleoside amidites are prepared similarly.

2'-O-[2(2-N,N-dimethylaminoethoxy)ethyl]-5-methyl uridine

20 **[00181]** 2[2-(Dimethylamino)ethoxy]ethanol (Aldrich, 6.66 g, 50
mmol) is slowly added to a solution of borane in tetrahydrofuran (1 M,
10 mL, 10 mmol) with stirring in a 100 mL bomb. Hydrogen gas
evolves as the solid dissolves. O²⁻, 2' - anhydro-5-methyluridine (1.2 g,
5 mmol), and sodium bicarbonate (2.5 mg) are added and the bomb is
25 sealed, placed in an oil bath, and heated to 155°C for 26 hours. The
bomb is cooled to room temperature and opened. The crude solution is
concentrated and the residue partitioned between water (200 mL) and
hexanes (200 mL). The excess phenol is extracted into the hexane layer.
The aqueous layer is extracted with ethyl acetate (3x200 mL) and the
30 combined organic layers are washed once with water, dried over
anhydrous sodium sulfate, and concentrated. The residue is columned on
silica gel using methanol/methylene chloride 1:20 (which has 2%
triethylamine) as the eluent. As the column fractions are concentrated a

colorless solid forms which is collected to give the title compound as a white solid.

5'-O-dimethoxytrityl-2'-O-[2(2-N,N-dimethylaminoethoxy) ethyl)]-5-methyl uridine

5 [00182] To 0.5 g (1.3 mmol) of 2'-O-[2(2-N,N-dimethylaminoethoxy)ethyl]1-5-methyl uridine in anhydrous pyridine (8 mL), triethylamine (0.36 mL) and dimethoxytrityl chloride (DMT-Cl, 0.87 g, 2 eq.) are added and stirred for 1 hour. The reaction mixture is poured into water (200 mL) and extracted with CH₂Cl₂ (2x200 mL). The
10 combined CH₂Cl₂ layers are washed with saturated NaHCO₃ solution, followed by saturated NaCl solution, and dried over anhydrous sodium sulfate. Evaporation of the solvent followed by silica gel chromatography using MeOH: CH₂Cl₂:Et₃N (20:1, v/v, with 1% triethylamine) gives the title compound.

15 **5'-O-Dimethoxytrityl-2'-O-[2(2-N,N-dimethylaminoethoxy)ethyl)]-5-methyl uridine-3'-O-(cyanoethyl-N,N-diisopropyl)phosphoramidite**

[00183] Diisopropylaminotetrazolide (0.6 g) and 2-cyanoethoxyN,N-diisopropyl phosphoramidite (1.1 mL, 2 eq.) are added to a solution of
20 5'-O-dimethoxytrityl-2'-O-[2(2-N,N-dimethylaminoethoxy)ethyl)]-5-methyluridine (2.17 g, 3 mmol) dissolved in CH₂Cl₂ (20 mL) under an atmosphere of argon. The reaction mixture is stirred overnight and the solvent evaporated. The resulting residue is purified by silica gel flash column chromatography with ethyl acetate as the eluent to give the title
25 compound.

Example 2

Oligonucleotide synthesis

[00184] Unsubstituted and substituted phosphodiester (P=O)
30 oligonucleotides are synthesized on an automated DNA synthesizer (Applied Biosystems model 380B) using standard phosphoramidite chemistry with oxidation by iodine.

- [00185] Phosphorothioates (P=S) are synthesized as for the phosphodiester oligonucleotides except the standard oxidation bottle is replaced by 0.2 M solution of 3H-1,2-benzodithiole-3-one 1,1-dioxide in acetonitrile for the stepwise thiation of the phosphite linkages. The thiation wait step is increased to 68 sec and is followed by the capping step. After cleavage from the CPG column and deblocking in concentrated ammonium hydroxide at 55°C (18 h), the oligonucleotides are purified by precipitating twice with 2.5 volumes of ethanol from a 0.5 M NaCl solution. Phosphinate oligonucleotides are prepared as described in U.S. Patent 5,508,270, herein incorporated by reference.
- [00186] Alkyl phosphonate oligonucleotides are prepared as described in U.S. Patent 4,469,863, herein incorporated by reference.
- [00187] 3'-Deoxy-3'-methylene phosphonate oligonucleotides are prepared as described in U.S. Patents 5,610,289 or 5,625,050, herein incorporated by reference.
- [00188] Phosphoramidite oligonucleotides are prepared as described in U.S. Patent, 5,256,775 or U.S. Patent 5,366,878, herein incorporated by reference.
- [00189] Alkylphosphonothioate oligonucleotides are prepared as described in WO 94/17093 and WO 94/02499 herein incorporated by reference.
- [00190] 3'-Deoxy-3'-amino phosphoramidate oligonucleotides are prepared as described in U.S. Patent 5,476,925, herein incorporated by reference.
- [00191] Phosphotriester oligonucleotides are prepared as described in U.S. Patent 5,023,243, herein incorporated by reference.
- [00192] Borano phosphate oligonucleotides are prepared as described in U.S. Patents 5,130,302 and 5,177,198, both herein incorporated by reference.

Example 3

Oligonucleoside Synthesis

[00193] Methylenemethylimino linked oligonucleosides, also identified as MMI linked oligonucleosides, methylenedimethylhydrazo linked oligonucleosides, also identified as MDH linked oligonucleosides, and methylenecarbonylamino linked oligonucleosides, also identified as amide-3 linked oligonucleosides, and methyleneaminocarbonyl linked oligonucleosides, also identified as amide-4 linked oligonucleosides, as well as mixed backbone compounds having, for instance, alternating MMI and P=O or P=S linkages are prepared as described in U.S. Patents 5,378,825; 5,386,023; 5,489,677; 5,602,240; and 5,610,289, all of which are herein incorporated by reference.

[00194] Formacetal and thioformacetal linked oligonucleosides are prepared as described in U.S. Patents 5,264,562 and 5,264,564, herein incorporated by reference.

[00195] Ethylene oxide linked oligonucleosides are prepared as described in U.S. Patent 5,223,618, herein incorporated by reference.

Example 4

PNA Synthesis

[00196] Peptide nucleic acids (PNAs) are prepared in accordance with any of the various procedures referred to in Peptide Nucleic Acids (PNA): Synthesis, Properties and Potential Applications, *Bioorganic & Medicinal Chemistry*, 1996, 4, 523. They may also be prepared in accordance with U.S. Patents 5,539,082; 5,700,922; and 5,719,262, herein incorporated by reference.

Example 5

Synthesis of Chimeric Oligonucleotides

[00197] Chimeric oligonucleotides, oligonucleosides, or mixed oligonucleotides/oligonucleosides of the invention can be of several different types. These include a first type wherein the "gap" segment of linked nucleosides is positioned between 5' and 3' "wing" segments of linked nucleosides and a second "open end" type wherein the "gap"

segment is located at either the 3' or the 5' terminus of the oligomeric compound. Oligonucleotides of the first type are also known in the art as "gapmers" or gapped oligonucleotides. Oligonucleotides of the second type are also known in the art as "hemimers" or "wingmers".

5 **2'-O-Me]-[2'-deoxy]-[2'-O-Me] Chimeric Phosphorothioate Oligonucleotides**

[00198] Chimeric oligonucleotides having 2'-O-alkyl phosphorothioate and 2'-deoxy phosphorothioate oligonucleotide segments are synthesized using an Applied Biosystems automated DNA synthesizer Model 380B, as above. Oligonucleotides are synthesized using the automated synthesizer and 2'-deoxy-5'-dimethoxytrityl-3'-O-phosphoramidite for the DNA portion and 5'-dimethoxytrityl-2'-O-methyl-3'-O-phosphoramidite for 5' and 3' wings. The standard synthesis cycle is modified by increasing the wait step after the delivery of tetrazole and base to 600 s repeated four times for RNA and twice for 2'-O-methyl. The fully protected oligonucleotide is cleaved from the support and the phosphate group is deprotected in 3:1 ammonia/ethanol at room temperature overnight then lyophilized to dryness. Treatment in methanolic ammonia for 24 hrs at room temperature is then done to deprotect all bases and sample is again lyophilized to dryness. The pellet is resuspended in 1M TBAF in THF for 24 hrs at room temperature to deprotect the 2' positions. The reaction is then quenched with 1M TEAA and the sample is then reduced to 1/2 volume by rotovac before being desalted on a G25 size exclusion column. The oligo recovered is then analyzed spectrophotometrically for yield and for purity by capillary electrophoresis and by mass spectrometry.

[00199] **[2'-O-(2-Methoxyethyl)]-[2'-deoxy]-[2'-O-(Methoxyethyl)] Chimeric Phosphorothioate Oligonucleotides**

[00200] **[2'-O-(2-methoxyethyl)]-[2'-deoxy]-[2'-O-(methoxyethyl)]** chimeric phosphorothioate oligonucleotides are prepared as per the procedure above for the 2'-O-methyl chimeric oligonucleotide, with the substitution of phosphorothioate oligonucleotides

are prepared as per the procedure above for 2'-O-(methoxyethyl) amidites for the 2'-O-methyl amidites.

[2'-O-(2-Methoxyethyl)Phosphodiester]--[2'-deoxy Phosphorothioate]--[2'-O-(2-Methoxyethyl)] Phosphodiester]

5 **Chimeric Oligonucleotides**

- [00201] [2'-O-(2-methoxyethyl phosphodiester)--[2'-deoxy phosphorothioate]--[2'-O-(methoxyethyl) phosphodiester] chimeric oligonucleotides are prepared as per the above procedure for the 2'-O-methyl chimeric oligonucleotide with the substitution of 2'-O-
- 10 (methoxyethyl) amidites for the 2'-O-methyl amidites, oxidization with iodine to generate the phosphodiester internucleotide linkages within the wing portions of the chimeric structures and sulfurization utilizing 3,4-dihydro-1,2-benzodithiole-3-one 1,1-dioxide (Beaucage Reagent) to generate the phosphorothioate internucleotide linkages for the center gap.
- 15 [00202] Other chimeric oligonucleotides, chimeric oligonucleosides, and mixed chimeric oligonucleotides/oligonucleosides are synthesized according to United States patent 5,623,065, herein incorporated by reference.

20 **Example 6**

Oligonucleotide Isolation

- [00203] After cleavage from the controlled pore glass column (Applied Biosystems) and deblocking in concentrated ammonium hydroxide at 55°C for 18 hours, the oligonucleotides or oligonucleosides
- 25 are purified by precipitation twice out of 0.5 M NaCl with 2.5 volumes ethanol. Synthesized oligonucleotides are analyzed by polyacrylamide gel electrophoresis on denaturing gels and judged to be at least 85% full-length material. The relative amounts of phosphorothioate and phosphodiester linkages obtained in synthesis are periodically checked
- 30 by ³¹P nuclear magnetic resonance spectroscopy, and for some studies oligonucleotides are purified by HPLC, as described by Chiang et al., *J. Biol. Chem.* 1991, 266, 18162-18171.

Example 7**Oligonucleotide Synthesis - 96 Well Plate Format**

- [00204] Oligonucleotides are synthesized via solid phase P(III) phosphoramidite chemistry on an automated synthesizer capable of assembling 96 sequences simultaneously in a standard 96 well format. Phosphodiester internucleotide linkages are afforded by oxidation with aqueous iodine. Phosphorothioate internucleotide linkages are generated by sulfurization utilizing 3,4-dihydro-2H-benzothiole-3-one 1,1-dioxide (Beaucage Reagent) in anhydrous acetonitrile. Standard base-protected beta-cyanoethyl-diisopropyl phosphoramidites can be purchased from commercial vendors (e.g. PE-Applied Biosystems, Foster City, CA, or Pharmacia, Piscataway, NJ). Non-standard nucleosides are synthesized as per known literature or patented methods. They are utilized as base protected beta-cyanoethyl-diisopropyl phosphoramidites.
- [00205] Oligonucleotides are cleaved from support and deprotected with concentrated NH_4OH at elevated temperature (55-60°C) for 12-16 hours and the released product then dried in vacuo. The dried product is then re-suspended in sterile water to afford a master plate from which all analytical and test plate samples are then diluted utilizing robotic pipettors.

Example 8**Oligonucleotide Analysis - 96 Well Plate Format**

- [00206] The concentration of oligonucleotide in each well is assessed by dilution of samples and UV absorption spectroscopy. The full-length integrity of the individual products is evaluated by capillary electrophoresis (CE) in either the 96 well format (Beckman P/ACE™ MDQ) or, for individually prepared samples, on a commercial CE apparatus (e.g., Beckman P/ACE™ 5000, ABI 270). Base and backbone composition is confirmed by mass analysis of the compounds utilizing electrospray-mass spectroscopy. All assay test plates are diluted from the master plate using single and multi-channel robotic pipettors. Plates

are judged to be acceptable if at least 85% of the compounds on the plate are at least 85% full length.

Example 9

5 Cell culture and oligonucleotide treatment

[00207] The effect of antisense compounds on target nucleic acid expression can be tested in any of a variety of cell types provided that the target nucleic acid is present at measurable levels. This can be routinely determined using, for example, PCR or Northern blot analysis.

10 The following 6 cell types are provided for illustrative purposes, but other cell types can be routinely used, provided that the target is expressed in the cell type chosen. This can be readily determined by methods routine in the art, for example Northern blot analysis, Ribonuclease protection assays, or RT-PCR.

15 T-24 cells:

[00208] The human transitional cell bladder carcinoma cell line T-24 is obtained from the American Type Culture Collection (ATCC) (Manassas, VA). T-24 cells are routinely cultured in complete McCoy's 5A basal media (Gibco/Life Technologies, Gaithersburg, MD)

20 supplemented with 10% fetal calf serum (Gibco/Life Technologies, Gaithersburg, MD), penicillin 100 units per mL, and streptomycin 100 micrograms per mL (Gibco/Life Technologies, Gaithersburg, MD). Cells are routinely passaged by trypsinization and dilution when they reached 90% confluence. Cells are seeded into 96-well plates (Falcon-
25 Primaria #3872) at a density of 7000 cells/well for use in RT-PCR analysis.

[00209] For Northern blotting or other analysis, cells may be seeded onto 100 mm or other standard tissue culture plates and treated similarly, using appropriate volumes of medium and oligonucleotide.

30 A549 cells:

[00210] The human lung carcinoma cell line A549 can be obtained from the American Type Culture Collection (ATCC) (Manassas, VA). A549 cells are routinely cultured in DMEM basal media (Gibco/Life

Technologies, Gaithersburg, MD) supplemented with 10% fetal calf serum (Gibco/Life Technologies, Gaithersburg, MD), penicillin 100 units per mL, and streptomycin 100 micrograms per mL (Gibco/Life Technologies, Gaithersburg, MD). Cells are routinely passaged by
5 trypsinization and dilution when they reached 90% confluence.
NHDF cells:

[00211] Human neonatal dermal fibroblast (NHDF) can be obtained from the Clonetics Corporation (Walkersville MD). NHDFs are routinely maintained in Fibroblast Growth Medium (Clonetics
10 Corporation, Walkersville MD) supplemented as recommended by the supplier. Cells are maintained for up to 10 passages as recommended by the supplier.

HEK cells:

[00212] Human embryonic keratinocytes (HEK) can be obtained
15 from the Clonetics Corporation (Walkersville MD). HEKs are routinely maintained in Keratinocyte Growth Medium (Clonetics Corporation, Walkersville MD) formulated as recommended by the supplier. Cells are routinely maintained for up to 10 passages as recommended by the supplier.

20 MCF-7 cells:

[00213] The human breast carcinoma cell line MCF-7 is obtained from the American Type Culture Collection (Manassas, VA). MCF-7 cells are routinely cultured in DMEM low glucose (Gibco/Life Technologies, Gaithersburg, MD) supplemented with 10% fetal calf
25 serum (Gibco/Life Technologies, Gaithersburg, MD). Cells are routinely passaged by trypsinization and dilution when they reached 90% confluence. Cells are seeded into 96-well plates (Falcon-Primaria #3872) at a density of 7000 cells/well for use in RT-PCR analysis.

[00214] For Northern blotting or other analyses, cells may be seeded
30 onto 100 mm or other standard tissue culture plates and treated similarly, using appropriate volumes of medium and oligonucleotide.

LA4 cells:

[00215] The mouse lung epithelial cell line LA4 is obtained from the American Type Culture Collection (Manassas, VA). LA4 cells are routinely cultured in F12K medium (Gibco/Life Technologies, Gaithersburg, MD) supplemented with 15% fetal calf serum (Gibco/Life Technologies, Gaithersburg, MD). Cells are routinely passaged by trypsinization and dilution when they reached 90% confluence. Cells are seeded into 96-well plates (Falcon-Primaria #3872) at a density of 3000-6000 cells/ well for use in RT-PCR analysis.

[00216] For Northern blotting or other analyses, cells may be seeded onto 100 mm or other standard tissue culture plates and treated similarly, using appropriate volumes of medium and oligonucleotide.

Treatment with antisense compounds:

[00217] When cells reached 80% confluence, they are treated with oligonucleotide. For cells grown in 96-well plates, wells are washed once with 200 μ L OPTI-MEMTM-1 reduced-serum medium (Gibco BRL) and then treated with 130 μ L of OPTI-MEMTM-1 containing 3.75 μ g/mL LIPOFECTINTM (Gibco BRL) and the desired concentration of oligonucleotide. After 4-7 hours of treatment, the medium is replaced with fresh medium. Cells are harvested 16-24 hours after oligonucleotide treatment.

[00218] The concentration of oligonucleotide used varies from cell line to cell line. To determine the optimal oligonucleotide concentration for a particular cell line, the cells are treated with a positive control oligonucleotide at a range of concentrations.

25

Example 10

Analysis of oligonucleotide inhibition of ESM-1 expression

[00219] Antisense modulation of ESM-1 expression can be assayed in a variety of ways known in the art. For example, ESM-1 mRNA levels can be quantitated by, e.g., Northern blot analysis, competitive polymerase chain reaction (PCR), or real-time PCR (RT-PCR). Real-time quantitative PCR is presently preferred. RNA analysis can be performed on total cellular RNA or poly(A)+ mRNA. Methods of RNA

isolation are taught in, for example, Ausubel, F.M. et al., *Current Protocols in Molecular Biology*, Volume 1, pp. 4.1.1-4.2.9 and 4.5.1-4.5.3, John Wiley & Sons, Inc., 1993. Northern blot analysis is routine in the art and is taught in, for example, Ausubel, F.M. et al., *Current*

5 *Protocols in Molecular Biology*, Volume 1, pp. 4.2.1-4.2.9, John Wiley & Sons, Inc., 1996. Real-time quantitative (PCR) can be conveniently accomplished using the commercially available ABI PRISM™ 7700 Sequence Detection System, available from PE-Applied Biosystems, Foster City, CA and used according to manufacturer's instructions. Prior

10 to quantitative PCR analysis, primer-probe sets specific to the target gene being measured are evaluated for their ability to be "multiplexed" with a GAPDH amplification reaction. In multiplexing, both the target gene and the internal standard gene GAPDH are amplified concurrently in a single sample. In this analysis, mRNA isolated from untreated cells

15 is serially diluted. Each dilution is amplified in the presence of primer-probe sets specific for GAPDH only, target gene only ("single-plexing"), or both (multiplexing). Following PCR amplification, standard curves of GAPDH and target mRNA signal as a function of dilution are generated from both the single-plexed and multiplexed samples. If both the slope

20 and correlation coefficient of the GAPDH and target signals generated from the multiplexed samples fall within 10% of their corresponding values generated from the single-plexed samples, the primer-probe set specific for that target is deemed as multiplexable. Other methods of PCR are also known in the art.

25 **[00220]** Protein levels of ESM-1 can be quantitated in a variety of ways well known in the art, such as immunoprecipitation, Western blot analysis (immunoblotting), ELISA or fluorescence-activated cell sorting (FACS). Antibodies directed to ESM-1 can be identified and obtained from a variety of sources, such as the MSRS catalog of antibodies (Aerie

30 Corporation, Birmingham, MI), or can be prepared via conventional antibody generation methods. Methods for preparation of polyclonal antisera are taught in, for example, Ausubel, F.M. et al., *Current Protocols in Molecular Biology*, Volume 2, pp. 11.12.1-11.12.9, John

- Wiley & Sons, Inc., 1997. Preparation of monoclonal antibodies is taught in, for example, Ausubel, F.M. et al., *Current Protocols in Molecular Biology*, Volume 2, pp. 11.4.1-11.11.5, John Wiley Sons, Inc., 1997.
- 5 [00221] Immunoprecipitation methods are standard in the art and can be found at, for example, Ausubel, F.M. et al., *Current Protocols in Molecular Biology*, Volume 2, pp. 10.16.1-10.16.11, John Wiley & Sons, Inc., 1998. Western blot (immunoblot) analysis is standard in the art and can be found at, for example, Ausubel, F.M. et al., *Current Protocols in*
- 10 *Molecular Biology*, Volume 2, pp. 10.8.1-10.8.21, John Wiley Sons, Inc., 1997. Enzyme-linked immunosorbent assays (ELISA) are standard in the art and can be found at, for example, Ausubel, F.M. et al., *Current Protocols in Molecular Biology*, Volume 2, pp. 11.2.1-11.2.22, John Wiley & Sons, Inc., 1991.

15

Example 11**Poly(A)+ mRNA isolation**

- [00222] Poly(A)+ mRNA is isolated according to Miura et al., *Clin. Chem.*, 1996, 42, 1758-1764. Other methods for poly(A)+ mRNA
- 20 isolation are taught in, for example, Ausubel, F.M. et al., *Current Protocols in Molecular Biology*, Volume 1, pp. 4.5.1-4.5.3, John Wiley & Sons, Inc., 1993. Briefly, for cells grown on 96-well plates, growth medium is removed from the cells and each well is washed with 200 μ L cold PBS. 60 μ L lysis buffer (10 mM Tris-HCl, pH 7.6, 1 mM EDTA,
- 25 0.5 M NaCl, 0.5% NP-40, 20 mM vanadyl-ribonucleoside complex) is added to each well, the plate is gently agitated and then incubated at room temperature for five minutes. 55 μ L of lysate is transferred to Oligo d(T) coated 96-well plates (AGCT Inc., Irvine CA). Plates are incubated for 60 minutes at room temperature, washed 3 times with 200
- 30 μ L of wash buffer (10 mM Tris-HCl pH 7.6, 1 mM EDTA, 0.3 M NaCl). After the final wash, the plate is blotted on paper towels to remove excess wash buffer and then air-dried for 5 minutes. 60 pL of elution buffer (5 mM Tris-HCl pH 7.6), preheated to 70°C is added to

each well, the plate is incubated on a 90°C hot plate for 5 minutes, and the eluate is then transferred to a fresh 96-well plate.

[00223] Cells grown on 100 mm or other standard plates may be treated similarly, using appropriate volumes of all solutions.

5

Example 12

Total RNA Isolation

[00224] Total mRNA is isolated using an RNEASY 96™ kit and buffers purchased from Qiagen Inc. (Valencia CA) following the manufacturer's recommended procedures. Briefly, for cells grown on 96-well plates, growth medium is removed from the cells and each well is washed with 200 µL cold PBS. 100 µL Buffer RLT is added to each well and the plate vigorously agitated for 20 seconds. 100 µL of 70% ethanol is then added to each well and the contents mixed by pipetting three times up and down. The samples are then transferred to the RNEASY 96™ well plate attached to a QIAVAC™ manifold fitted with a waste collection tray and attached to a vacuum source. Vacuum is applied for 15 seconds. 1 mL of Buffer RW1 is added to each well of the RNEASY 96™ plate and the vacuum again applied for 15 seconds. 1 mL of Buffer RPE is then added to each well of the RNEASY 96™ plate and the vacuum applied for a period of 15 seconds. The Buffer RPE wash is then repeated and the vacuum is applied for an additional 10 minutes. The plate is then removed from the QIAVAC™ manifold and blotted dry on paper towels. The plate is then re-attached to the QIAVAC™ manifold fitted with a collection tube rack containing 1.2 mL collection tubes. RNA is then eluted by pipetting 60µL water into each well, incubating one minute, and then applying the vacuum for 30 seconds. The elution step is repeated with an additional 60µL water.

[00225] The repetitive pipetting and elution steps may be automated using a QIAGEN Bio-Robot 9604 (Qiagen, Inc., Valencia CA). Essentially, after lysing of the cells on the culture plate, the plate is transferred to the robot deck where the pipetting, DNase treatment and elution steps are carried out.

Example 13**Real-time Quantitative PCR Analysis of ESM-1 mRNA Levels**

[00226] Real-time quantitative reverse transcription polymerase chain
5 reaction experiments show ESM-1 mRNA expression at levels of
threefold or higher at the mRNA level in nine out of ten tumors when
compared to the normal tissue (Figure 2). Quantitation of ESM-1 mRNA
levels were determined by real-time quantitative PCR using the ABI
PRISM™ 7700 Sequence Detection System (PE-Applied Biosystems,
10 Foster City, CA) according to manufacturer's instructions. This is a
closed-tube, non-gel-based, fluorescence detection system which allows
high-throughput quantitation of polymerase chain reaction (PCR)
products in real-time. As opposed to standard PCR, in which
amplification products are quantitated after the PCR is completed,
15 products in real-time quantitative PCR are quantitated as they
accumulate. This is accomplished by including in the PCR reaction an
oligonucleotide probe that anneals specifically between the forward and
reverse PCR primers, and contains two fluorescent dyes. A reporter dye
(e.g., JOE, FAM™, or VIC, obtained from either Operon Technologies
20 Inc., Alameda, CA or PE-Applied Biosystems, Foster City, CA) is
attached to the 5' end of the probe and a quencher dye (e.g., TAMRA,
obtained from either Operon Technologies Inc., Alameda, CA or PE-
Applied Biosystems, Foster City, CA) is attached to the 3' end of the
probe. When the probe and dyes are intact, reporter dye emission is
25 quenched by the proximity of the 3' quencher dye. During amplification,
annealing of the probe to the target sequence creates a substrate that can
be cleaved by the 5'-exonuclease activity of Taq polymerase. During the
extension phase of the PCR amplification cycle, cleavage of the probe
by Taq polymerase releases the reporter dye from the remainder of the
30 probe (and hence from the quencher moiety) and a sequence-specific
fluorescent signal is generated. With each cycle, additional reporter dye
molecules are cleaved from their respective probes, and the fluorescence
intensity is monitored at regular intervals by laser optics built into the

ABI PRISM™ 7700 Sequence Detection System. In each assay, a series of parallel reactions containing serial dilutions of mRNA from untreated control samples generates a standard curve that is used to quantitate the percent inhibition after antisense oligonucleotide treatment of test samples.

[00227] PCR reagents were obtained from PE-Applied Biosystems, Foster City, CA. RT-PCR reactions were carried out by adding 25µL PCR cocktail (1x TAQMAN™ buffer A, 5.5 MM MgCl₂, 300 µM each of dATP, dCTP and dGTP, 600 µM of dUTP, 100 nM each of forward primer, reverse primer, and probe, 20 Units RNase inhibitor, 1.25 Units AMPLITAQ GOLD™, and 12.5 Units MuLV reverse transcriptase) to 96 well plates containing 25 µL poly(A) mRNA solution. The RT reaction was carried out by incubation for 30 minutes at 48°C. Following a 10 minute incubation at 95°C to activate the AMPLITAQ GOLD™, 40 cycles of a two-step PCR protocol were carried out: 95°C for 15 seconds (denaturation) followed by 60°C for 1.5 minutes (annealing/extension).

[00228] Probes and primers to human ESM-1 were designed to hybridize to a human ESM-1 sequence, using published sequence, information (GenBank accession number NM_007036, incorporated herein as Figure 1. For human ESM-1 the PCR primers were:

forward primer: CTGCTTCCCACCAGCAAAG SEQ ID NO:2001
reverse primer: GCAAGACGCTCTTCATGTTTCC SEQ ID NO:2002
and the PCR probe is: FAM™- CGACTGGAGAGCCGAGCCGGA SEQ ID NO:2003 -TAMRA where FAM™ (PE-Applied Biosystems, Foster City, CA) is the fluorescent reporter dye) and TAMRA (PE-Applied Biosystems, Foster City, CA) is the quencher dye. For human cyclophilin the PCR primers were:

forward primer: CCCACCGTGTTCCTTCGACAT SEQ ID NO:2004
reverse primer: TTTCTGCTGTCTTTGGGACCTT SEQ ID NO:2005
and the PCR probe is: 5' JOE- CGCGTCTCCTTTGAGCTGTTTGCA SEQ ID NO:2006 - TAMRA 3' where JOE (PE-Applied Biosystems,

Foster City, CA) is the fluorescent reporter dye) and TAMRA (PE-Applied Biosystems, Foster City, CA) is the quencher dye.

Example 14

5 **Antisense inhibition of human ESM-1 expression by chimeric phosphorothioate oligonucleotides having 2'-MOE wings and a deoxy gap**

[00229] In accordance with the present invention, a series of oligonucleotides are designed to target different regions of the human
10 ESM-1 RNA, using published sequences (NM_007036, incorporated herein as Figure 1. The oligonucleotides are shown in Table 1.
"Position" indicates the first (5'-most) nucleotide number on the particular target sequence to which the oligonucleotide binds. The indicated parameters for each oligo were predicted using RNAstructure
15 3.7 by David H. Mathews, Michael Zuker, and Douglas H. Turner. The parameters are described either as free energy (The energy that is released when a reaction occurs. The more negative the number, the more likely the reaction will occur. All free energy units are in kcal/mol.) or melting temperature (temperature at which two anneal
20 strands of polynucleic acid separate). The higher the temperature, the greater the affinity between the two strands. When designing an antisense oligonucleotide that will bind with high affinity, it is desirable to consider the structure of the target RNA strand and the antisense oligomer. Specifically, for an oligomer to bind tightly (in the table
25 described as 'duplex formation'), it should be complementary to a stretch of target RNA that has little self-structure (in the table the free energy of which is described as 'target structure'). Also, the oligomer should have little self-structure, either intramolecular (in the table the free energy of which is described as 'intramolecular oligo') or
30 bimolecular (in the table the free energy of which is described as 'intermolecular oligo'). Breaking up any self-structure amounts to a binding penalty. All compounds in Table 1 are chimeric oligonucleotides ("gapmers") 20 nucleotides in length, composed of a

- central "gap" region consisting of ten 2'-deoxynucleotides, which is flanked on both sides (5' and 3' directions) by four-nucleotide "wings". The wings are composed of 2'-methoxyethyl (2'-MOE) nucleotides. The internucleoside (backbone) linkages are phosphorothioate (P=S) throughout the oligonucleotide. Cytidine residues in the 2'-MOE wings are 5-methylcytidines. All cytidine residues are 5-methylcytidines.

TABLE 1

position	oligo	kcal/ mol total binding	kcal/ mol duplex formation	deg C Tm of Duplex	kcal/ mol target structure	kcal/mol Intra- molecular oligo	kcal/mol Inter- molecular oligo
31	GCTCGGCTCTCCAGTCGTGG SEQ ID NO;1	-25.9	-31	85.7	-3.4	-1.7	-7.1
32	GGCTCGGCTCTCCAGTCGTG SEQ ID NO;2	-25.9	-31	85.7	-3.4	-1.7	-9.6
28	CGGCTCTCCAGTCGTGGTCT SEQ ID NO;3	-25.7	-30.4	84.9	-3.4	-1.2	-6.1
30	CTCGGCTCTCCAGTCGTGGT SEQ ID NO;4	-25.3	-30.4	84.9	-3.4	-1.7	-6.1
923	GCCTAGCTCCCTCTTTGGTT SEQ ID NO;5	-25.3	-30.4	85.5	-5.1	0	-6.2
33	CGGCTCGGCTCTCCAGTCGT SEQ ID NO;6	-25.1	-31.8	85.2	-4.7	-2	-9.6
27	GGCTCTCCAGTCGTGGTCTT SEQ ID NO;7	-25	-29.7	86.1	-3.4	-1.2	-6.1
928	GCTTTGCCTAGCTCCCTCTT SEQ ID NO;8	-24.9	-30.7	85.6	-5.1	-0.4	-6.2
29	TCGGCTCTCCAGTCGTGGTC SEQ ID NO;9	-24.8	-29.9	84.8	-3.4	-1.7	-6.1
924	TGCCTAGCTCCCTCTTTGGT SEQ ID NO;10	-24.6	-30.3	84.8	-5.1	-0.3	-4.6
26	GCTCTCCAGTCGTGGTCTTT SEQ ID NO;11	-24.4	-28.6	83.7	-3.4	-0.6	-5.2
929	AGCTTTGCCTAGCTCCCTCT SEQ ID NO;12	-24.2	-30.6	85.6	-5.1	-1.2	-7.7
930	CAGCTTTGCCTAGCTCCCTC SEQ ID NO;13	-23.9	-30.4	84.6	-5.1	-1.3	-7.8
931	TCAGCTTTGCCTAGCTCCCT SEQ ID NO;14	-23.9	-30.4	84.6	-5.1	-1.3	-7.8
1265	ACCGTCCTTCAGATACAGGT SEQ ID NO;15	-23.9	-26.3	74.5	-1.9	-0.1	-4.5
240	GTTTCTCCCCGCCCTGCAGC SEQ ID NO;16	-23.6	-34.9	90.4	-10.6	-0.4	-8.1

position	oligo	kcal/ mol	kcal/ mol	deg C	kcal/ mol	kcal/mol	kcal/mol
		total binding	duplex form- ation	Tm of Duplex	target struc- ture	Intra- molecular oligo	Inter- molecular oligo
925	TTGCCTAGCTCCCTCTTTGG SEQ ID NO;17	-23.5	-29.2	81.5	-5.1	-0.3	-4.8
1264	CCGTCCTTCAGATACAGGTA SEQ ID NO;18	-23.4	-25.8	73.4	-1.9	-0.1	-3.9
927	CTTTGCCTAGCTCCCTCTTT SEQ ID NO;19	-23.3	-29	81.5	-5.1	-0.3	-4.8
932	TTTCAGCTTTGCCTAGCTCCC SEQ ID NO;20	-23.1	-29.6	83	-5.1	-1.3	-7.8
241	AGTTTCTCCCCGCCCTGCAG SEQ ID NO;21	-23	-33.1	86.5	-9.4	-0.4	-7.8
243	CAAGTTTCTCCCCGCCCTGC SEQ ID NO;22	-23	-32.4	83.6	-9.4	0	-2.8
244	GCAAGTTTCTCCCCGCCCTG SEQ ID NO;23	-23	-32.4	83.6	-9.4	0	-3.4
245	AGCAAGTTTCTCCCCGCCCT SEQ ID NO;24	-23	-32.4	84.1	-9.4	0	-4.1
926	TTTGCCTAGCTCCCTCTTTG SEQ ID NO;25	-22.4	-28.1	79.3	-5.1	-0.3	-4.8
242	AAGTTTCTCCCCGCCCTGCA SEQ ID NO;26	-22.3	-32.4	83.6	-9.4	-0.4	-4.7
20	CAGTCGTGGTCTTTGCTGGT SEQ ID NO;27	-22	-27.3	80	-5.3	0	-3.6
246	TAGCAAGTTTCTCCCCGCC SEQ ID NO;28	-21.8	-31.2	81.8	-9.4	0	-4.1
21	CCAGTCGTGGTCTTTGCTGG SEQ ID NO;29	-21.7	-28.1	80	-5.3	-1	-5.3
23	CTCCAGTCGTGGTCTTTGCT SEQ ID NO;30	-21.6	-28.2	81.4	-5.3	-1.2	-6
34	CCGGCTCGGCTCTCCAGTCG SEQ ID NO;31	-21.5	-32.6	84.9	-8.9	-2.2	-8.5
19	AGTCGTGGTCTTTGCTGGTG SEQ ID NO;32	-21.3	-26.6	78.7	-5.3	0	-3.6
199	GTCGTCGAGCACTGTCCTCT SEQ ID NO;33	-21.2	-28.8	81.5	-7	-0.3	-4.9
24	TCTCCAGTCGTGGTCTTTGC SEQ ID NO;34	-21.1	-27.7	81.3	-5.3	-1.2	-5
247	GTCGTCGAGCACTGTCCTCT SEQ ID NO;35	-21	-30.4	81.9	-9.4	0	-4.1
1024	CCTCCCCATCTTCTCCTGCT SEQ ID NO;36	-21	-32.7	87.6	-11.7	0	-3.6
200	AGTCGTCGAGCACTGTCCTC SEQ ID NO;37	-20.9	-27.9	79.9	-7	0	-5.3
191	GCACTGTCCTCTTGCAGCGC SEQ ID NO;38	-20.8	-30.4	84.4	-8.7	-0.8	-8
22	TCCAGTCGTGGTCTTTGCTG SEQ ID NO;39	-20.7	-27.3	79.1	-5.3	-1.2	-6
196	GTCGAGCACTGTCCTCTTGC SEQ ID NO;40	-20.7	-28.3	81.2	-7	-0.3	-5.7
198	TCGTCGAGCACTGTCCTCTT SEQ ID NO;41	-20.7	-27.7	78.3	-7	0.2	-4.9
922	CCTAGCTCCCTCTTTGGTTG SEQ ID NO;42	-20.7	-28.6	80.6	-7.9	0	-6.2
1263	CGTCCTTCAGATACAGGTAA SEQ ID NO;43	-20.7	-23.1	67.4	-1.9	-0.1	-3.9
35	TCCGGCTCGGCTCTCCAGTC SEQ ID NO;44	-20.6	-32.2	87.6	-10.1	-1.4	-8.5
1023	CTCCCCATCTTCTCCTGCTC SEQ ID NO;45	-20.5	-31.1	86.1	-10.6	0	-3.6
201	CAGTCGTCGAGCACTGTCCT SEQ ID NO;46	-20.4	-28.2	79.1	-7	-0.5	-8.4

position	oligo	kcal/ mol	kcal/ mol	deg C	kcal/ mol	kcal/mol	kcal/mol
		total binding	duplex form- ation	Tm of Duplex	target struc- ture	Intra- molecular oligo	Inter- molecular oligo
36	CTCCGGCTCGGCTCTCCAGT SEQ ID NO;47	-20.1	-32.7	87.6	-11.1	-1.4	-8.5
327	CCAAAAGGATCCTCCCCATT SEQ ID NO;48	-20	-26.9	70.9	-5.8	-0.9	-9.4
328	ACCAAAAGGATCCTCCCCAT SEQ ID NO;49	-20	-27	71	-5.8	-0.9	-9.9
190	CACTGTCTCTTGCAGCGCG SEQ ID NO;50	-19.8	-29.4	79.5	-8.7	-0.6	-9
919	AGCTCCCTCTTTGGTTGACC SEQ ID NO;51	-19.8	-28.8	81.2	-9	0	-5.7
197	CGTCGAGCACTGTCTCTTG SEQ ID NO;52	-19.7	-27.3	76.3	-7	-0.3	-4.9
1022	TCCCCATCTTCTCCTGCTCT SEQ ID NO;53	-19.6	-31.1	86.1	-11.5	0	-3.6
239	TTTCTCCCCGCCCTGCAGCG SEQ ID NO;54	-19.2	-34.5	86.2	-13.7	-1.5	-9.4
18	GTCGTGGTCTTTGCTGGTGG SEQ ID NO;55	-19.1	-27.8	81.1	-8.7	0	-3.6
248	GGTAGCAAGTTTCTCCCCGC SEQ ID NO;56	-19	-29.6	81	-10.6	0	-4.1
1266	AACCGTCCTTCAGATACAGG SEQ ID NO;57	-18.8	-24.4	68.9	-5.6	0	-4
1025	CCCTCCCCATCTTCTCCTGC SEQ ID NO;58	-18.7	-33.8	88.9	-15.1	0	-2.6
202	ACAGTCGTCGAGCACTGTCC SEQ ID NO;59	-18.6	-27.5	77.7	-7	-1.8	-11
442	TTTCAGGCATTTTCCCGTCC SEQ ID NO;60	-18.5	-28.1	78	-9.6	0.7	-4
1538	TTATCATGCCTCAGATGTTT SEQ ID NO;61	-18.5	-22.7	68	-4.2	0	-4.4
1539	TTATCATGCCTCAGATGTTT SEQ ID NO;62	-18.5	-22.7	68	-4.2	0	-3.8
1021	CCCCATCTTCTCCTGCTCTT SEQ ID NO;63	-18.4	-30.8	84.6	-12.4	0	-3.6
1531	GCCTCAGATGTTTGAAAACC SEQ ID NO;64	-18.4	-22.5	64.6	-3.6	-0.1	-5.7
1537	TATCATGCCTCAGATGTTTG SEQ ID NO;65	-18.4	-22.6	67.5	-4.2	0	-4.4
192	AGCACTGTCTCTTGCAGCG SEQ ID NO;66	-18.3	-28.6	80.3	-8.7	-1.6	-6.5
585	TTCTCATACGGGAGACCC SEQ ID NO;67	-18.3	-27.1	74.2	-7.4	-1.3	-5.5
936	GGTCTTCAGCTTTGCC TAGC SEQ ID NO;68	-18.3	-28	82.3	-9	-0.4	-6.2
1352	AGTGGGTAAAATACTTCTTA SEQ ID NO;69	-18.2	-18.4	57.7	0	0.6	-3.7
37	CCTCCGGCTCGGCTCTCCAG SEQ ID NO;70	-18.1	-33.5	87.2	-13.9	-1.4	-8.5
193	GAGCACTGTCTCTTGCAGC SEQ ID NO;71	-18.1	-28.4	82.2	-8.7	-1.6	-5.5
915	CCCTCTTTGGTTGACGTGC SEQ ID NO;72	-18.1	-28.2	79.8	-10.1	0	-6.7
1351	GTGGGTAAAATACTTCTTAG SEQ ID NO;73	-17.9	-18.4	57.7	0	-0.2	-3.3
326	CAAAAAGGATCCTCCCCATTA SEQ ID NO;74	-17.8	-24.6	67.1	-5.8	-0.1	-9.9
437	GGCATTTCCTCCCTG SEQ ID NO;75	-17.7	-33.7	85.7	-16	0	-4
443	ATTTCAGGCATTTTCCCGTC SEQ ID NO;76	-17.7	-26.1	74.4	-7.9	-0.1	-4

position	oligo	kcal/ mol	kcal/ mol	deg C	kcal/ mol	kcal/mol	kcal/mol
		total binding	duplex form- ation	Tm of Duplex	target struc- ture	Intra- molecular oligo	Inter- molecular oligo
533	CAATATTGCCATCTCCAGAT SEQ ID NO:77	-17.7	-23.3	66.8	-5.6	0	-6.8
921	CTAGCTCCCTCTTGGTTGA SEQ ID NO:78	-17.7	-27.2	78.4	-9.5	0	-6.2
1597	GCTCATTTTTTGACATTTT SEQ ID NO:79	-17.6	-20.2	62.5	-2.1	-0.1	-2.6
238	TTCTCCCCGCCCTGCAGCGC SEQ ID NO:80	-17.5	-36.2	89.8	-17	-1.7	-9.7
1027	CCCCCTCCCCATCTTCTCCT SEQ ID NO:81	-17.5	-36	91.2	-18.5	0	-0.5
1598	TGCTCATTTTTTGACATTTT SEQ ID NO:82	-17.5	-20.1	62.1	-2.1	-0.1	-3.3
329	CACCAAAAGGATCCTCCCCA SEQ ID NO:83	-17.4	-27.7	72.1	-9.1	-0.9	-9.9
1599	TTGCTCATTTTTTGACATTT SEQ ID NO:84	-17.4	-20.1	62.1	-2.1	-0.2	-3.3
534	ACAATATTGCCATCTCCAGA SEQ ID NO:85	-17.3	-23.5	67.4	-5.6	0	-8.5
1349	GGGTAAAATACTTCTTAGAT SEQ ID NO:86	-17.3	-17.8	56.1	0	-0.2	-4.3
1350	TGGGTAAAATACTTCTTAGA SEQ ID NO:87	-17.3	-17.8	56.1	0	-0.2	-4.3
438	AGGCATTTTCCCGTCCCCCT SEQ ID NO:88	-17.2	-33.7	86.3	-16	-0.1	-4
194	CGAGCACTGTCTCTTGACAG SEQ ID NO:89	-17.1	-27.4	77.2	-8.7	-1.6	-6.5
469	GGTACTGAATATTGGAAGA SEQ ID NO:90	-17.1	-18.7	57.9	-1.6	0	-4.6
678	AAAGTTCCTAAAATGTTGGC SEQ ID NO:91	-17.1	-19.1	57.8	-2	0	-3.1
937	CGGTCTTCAGCTTTGCCCTAG SEQ ID NO:92	-17.1	-27	77.1	-9.9	0	-4.5
1032	TCCCACCCCTCCCCATCTT SEQ ID NO:93	-17.1	-36.7	90.2	-19.6	0	-0.5
914	CCTCTTTGGTTGACCTGTCT SEQ ID NO:94	-17	-27.1	78.2	-10.1	0	-6.7
364	GCCGTAGGGACAGTCTTTGC SEQ ID NO:95	-16.8	-27.9	79.2	-9.5	-1.5	-8.4
586	TTTCCTCATACGGGAGACC SEQ ID NO:96	-16.8	-25.2	71.1	-7.4	-0.9	-5.1
1028	ACCCCTCCCCATCTTCTCC SEQ ID NO:97	-16.8	-35.3	90	-18.5	0	-0.5
25	CTCTCCAGTCGTGGTCTTTG SEQ ID NO:98	-16.7	-26.8	78.6	-8.8	-1.2	-5
235	TCCCCGCCCTGCAGCGACA SEQ ID NO:99	-16.7	-36.4	88.2	-18	-1.7	-10
1421	ATGACTTGCACTAACACATT SEQ ID NO:100	-16.7	-20.3	60.8	-3.6	0	-5
444	AATTTTCAGGCATTTTCCCGT SEQ ID NO:101	-16.6	-25	70.4	-7.9	-0.1	-4
237	TCTCCCCGCCCTGCAGCGCA SEQ ID NO:102	-16.5	-36.8	90.3	-18.6	-1.7	-10.5
441	TTCAGGCATTTTCCCGTCCC SEQ ID NO:103	-16.5	-30	81.1	-13	-0.1	-3.3
1354	CCAGTGGGTAAAATACTTCT SEQ ID NO:104	-16.5	-21.3	63	-4.3	-0.2	-6.7
1262	GTCCTTCAGATACAGGTAAC SEQ ID NO:105	-16.4	-22.5	67.8	-5.6	-0.1	-3.9
1708	CTGCTGAAAATTGATTCTTC SEQ ID NO:106	-16.4	-18.7	57.7	-2.3	0.4	-3.6

position	oligo	kcal/ mol	kcal/ mol	deg C	kcal/ mol	kcal/mol	kcal/mol
		total binding	duplex form- ation	Tm of Duplex	target struc- ture	Intra- molecular oligo	Inter- molecular oligo
539	CTCTCACAAATATTGCCATCT SEQ ID NO:107	-16.3	-23.1	67.5	-6.2	0	-8.5
778	GGATGTTATGGATTGTAAGT SEQ ID NO:108	-16.3	-20.1	62.2	-3.8	0	-2.2
938	GCGGTCTTCAGCTTTGCCTA SEQ ID NO:109	-16.3	-28.8	81.3	-12.5	0	-4.5
1419	GACTTGCACTAACACATTTA SEQ ID NO:110	-16.3	-20.1	60.7	-3.8	0	-5
1420	TGACTTGCACTAACACATTT SEQ ID NO:111	-16.3	-20.4	61.1	-4.1	0	-4.7
1272	CCCCAGAACCGTCCTTCAGA SEQ ID NO:112	-16.2	-29.9	77.8	-13.7	0.6	-2.7
1348	GGTAAAATACTTCTTAGATT SEQ ID NO:113	-16.2	-16.7	53.9	0	-0.2	-4.3
189	ACTGTCCTCTTGCGCGCGG SEQ ID NO:114	-16.1	-29.9	81	-12.9	-0.6	-9
393	CAGGTCTCTCTGCAATCCAT SEQ ID NO:115	-16.1	-25.9	75.1	-9.8	0	-4.9
677	AAGTTCCTAAAATGTTGGCT SEQ ID NO:116	-16.1	-20.7	61.5	-4.6	0	-3.9
769	GGATTGTAAGTATCCTACTT SEQ ID NO:117	-16.1	-21.2	64.5	-3.8	-1.2	-5.5
774	GTTATGGATTGTAAGTATCC SEQ ID NO:118	-16.1	-20.4	63.1	-3.8	-0.1	-4.4
939	TGCGGTCTTCAGCTTTGCCT SEQ ID NO:119	-16.1	-29.1	81.7	-12.3	-0.5	-4.5
940	CTGCGGTCTTCAGCTTTGCC SEQ ID NO:120	-16.1	-29.1	81.7	-12.3	-0.5	-4.5
1353	CAGTGGGTAAAATACTTCTT SEQ ID NO:121	-16.1	-19.4	59.6	-2.8	-0.2	-4.8
934	TCTTCAGCTTTGCCTAGCTC SEQ ID NO:122	-16	-26.9	79.6	-9.7	-1.1	-7.6
1605	CCTCTGTTGCTCATTTTTTG SEQ ID NO:123	-16	-23.8	70.9	-7.8	0	-3.6
17	TCGTGGTCTTTGCTGGTGGG SEQ ID NO:124	-15.9	-27.8	80.1	-11.9	0	-3.6
436	GCATTTTCCCGTCCCCCTGT SEQ ID NO:125	-15.9	-33.7	86.7	-17.8	0	-3.4
679	GAAAGTTCCTAAAATGTTGG SEQ ID NO:126	-15.9	-17.9	55.2	-2	0	-2.9
1267	GAACCGTCCTTCAGATACAG SEQ ID NO:127	-15.9	-23.8	67.7	-7.9	0	-3.1
1596	CTCATTTTTTGACATTTTTT SEQ ID NO:128	-15.9	-18.5	58.6	-2.1	-0.1	-2.6
1706	GCTGAAAATTGATTCTTCTT SEQ ID NO:129	-15.9	-18.8	58.1	-2.3	-0.3	-4.9
1903	ATTCACAACCTCTGTTGGCCA SEQ ID NO:130	-15.9	-24.8	71.3	-7.8	-0.9	-9.5
203	CACAGTCGTCGAGCACTGTC SEQ ID NO:131	-15.8	-26.2	75.2	-8.3	-2	-11.2
1280	TTCCTATGCCCCAGAACCGT SEQ ID NO:132	-15.8	-29.7	77	-13.9	0	-3
1707	TGCTGAAAATTGATTCTTCT SEQ ID NO:133	-15.8	-18.7	57.7	-2.3	-0.3	-4.9
1709	TCTGCTGAAAATTGATTCTT SEQ ID NO:134	-15.8	-18.7	57.7	-2.3	-0.3	-4.7
1710	TTCTGCTGAAAATTGATTCT SEQ ID NO:135	-15.8	-18.7	57.7	-2.3	-0.3	-6.6
770	TGGATTGTAAGTATCCTACT SEQ ID NO:136	-15.7	-21.1	64.1	-3.8	-1.6	-5.2

position	oligo	kcal/ mol	kcal/ mol	deg C	kcal/ mol	kcal/mol	kcal/mol
		total binding	duplex form- ation	Tm of Duplex	target struc- ture	Intra- molecular oligo	Inter- molecular oligo
912	TCTTTGGTTGACCTGTCTCC SEQ ID NO:137	-15.7	-26.6	78	-10.9	0	-6
917	CTCCCTCTTTGGTTGACCTG SEQ ID NO:138	-15.7	-27.9	78.2	-12.2	0	-6.7
1030	CCACCCCTCCCATCTTCT SEQ ID NO:139	-15.7	-35.6	89	-19.9	0	-0.5
1532	TGCCTCAGATGTTTGAAAAC SEQ ID NO:140	-15.7	-20.5	60.9	-4.8	0	-5.3
1026	CCCCCTCCCATCTTCTCTG SEQ ID NO:141	-15.6	-34	87.8	-18.4	0	-1.4
1033	CTCCACCCCTCCCATCT SEQ ID NO:142	-15.6	-37.5	91.6	-21.9	0	-0.5
1606	CCCTCTGTTGCTCATTTTTT SEQ ID NO:143	-15.6	-25.8	74.8	-10.2	0	-3.6
16	CGTGGTCTTTGCTGGTGGGA SEQ ID NO:144	-15.5	-28	79.6	-12.5	0	-3.6
764	GTAAGTATCCTACTTTTTGT SEQ ID NO:145	-15.5	-20.8	64.5	-3.8	-1.4	-5.1
781	TATGGATGTTATGGATTGTA SEQ ID NO:146	-15.5	-19.3	60.2	-3.8	0	-1.3
1029	CACCCCTCCCATCTTCTC SEQ ID NO:147	-15.5	-34	87.7	-18.5	0	-0.5
1036	CCACTCCACCCCTCCCA SEQ ID NO:148	-15.5	-39.1	92.4	-23.6	0	0
1260	CCTTCAGATACAGGTAACCC SEQ ID NO:149	-15.5	-24.9	70.3	-9.4	0	-4
1781	ACAGTCCTGTTTGCTAAG SEQ ID NO:150	-15.5	-23.7	70.7	-8.2	0	-6.1
210	CAGCAGCCACAGTCGTCGAG SEQ ID NO:151	-15.4	-28	77.3	-12.6	0	-4.9
913	CTCTTTGGTTGACCTGTCTC SEQ ID NO:152	-15.4	-25.5	76.2	-10.1	0	-6.7
916	TCCCTCTTTGGTTGACCTGT SEQ ID NO:153	-15.4	-28.2	79.8	-12.8	0	-6.7
1530	CCTCAGATGTTTGAAAACCT SEQ ID NO:154	-15.4	-21.6	62.5	-5.7	-0.1	-5.7
918	GCTCCCTCTTTGGTTGACCT SEQ ID NO:155	-15.3	-29.7	82.9	-14.4	0	-6.7
330	TCACCAAAGGATCCTCCCC SEQ ID NO:156	-15.2	-27.4	72.5	-11	-0.9	-9.9
538	TCTCACAATATTGCCATCTC SEQ ID NO:157	-15.2	-22.6	67.1	-6.9	0	-7.6
587	ATTTCCTCATTACGGGAGAC SEQ ID NO:158	-15.2	-23.2	67.5	-7.4	-0.3	-4.2
682	CTAGAAAGTTCCTAAAATGT SEQ ID NO:159	-15.2	-17.2	54	-2	0	-3.7
1347	GTAAATACTTCTTAGATTT SEQ ID NO:160	-15.2	-15.6	51.7	0	0	-3.7
1600	GTTGCTCATTTTTGGACATT SEQ ID NO:161	-15.2	-21.2	65	-5.5	-0.2	-3.3
195	TCGAGCACTGTCTCTTGCA SEQ ID NO:162	-15.1	-27.8	78.6	-11.1	-1.6	-6.3
319	ATCCTCCCCATTAGAAGGCT SEQ ID NO:163	-15.1	-28	76.5	-12.9	0	-3.7
394	GCAGGTCTCTCTGCAATCCA SEQ ID NO:164	-15.1	-27.7	79.7	-9.8	-2.8	-8.2
440	TCAGGCATTTTCCCGTCCCC SEQ ID NO:165	-15.1	-31.9	84	-16.3	-0.1	-4
779	TGGATGTTATGGATTGTAAG SEQ ID NO:166	-15.1	-18.9	58.9	-3.8	0	-2.2

position	oligo	kcal/ mol	kcal/ mol	deg C	kcal/ mol	kcal/mol	kcal/mol
		total binding	duplex form- ation	Tm of Duplex	target struc- ture	Intra- molecular oligo	Inter- molecular oligo
780	ATGGATGTTATGGATTGTAA SEQ ID NO:167	-15.1	-18.9	58.7	-3.8	0	-2.2
1037	CCCACTCCCACCCCCTCCCC SEQ ID NO:168	-15.1	-40.4	94.4	-25.3	0	0
1780	CAGTCCTGTTTGTGCTAAGA SEQ ID NO:169	-15.1	-24.1	71.5	-9	0	-3.6
320	GATCCTCCCCATTAGAAGGC SEQ ID NO:170	-15	-27.7	75.9	-12.7	0	-3.5
365	TGCCGTAGGGACAGTCTTTG SEQ ID NO:171	-15	-26.1	74.5	-9.5	-1.5	-8.4
782	ATATGGATGTTATGGATTGT SEQ ID NO:172	-15	-19.6	60.8	-4.6	0	-1.8
249	CGGTAGCAAGTTTCTCCCCG SEQ ID NO:173	-14.9	-28.6	76.5	-13.7	0	-3.8
321	GGATCCTCCCCATTAGAAGG SEQ ID NO:174	-14.9	-27.1	74.2	-11.7	-0.1	-7.7
537	CTCACAATATTGCCATCTCC SEQ ID NO:175	-14.9	-24.2	69.2	-8.7	0	-8.5
1020	CCCATCTTCTCCTGCTCTTA SEQ ID NO:176	-14.9	-28.5	80.5	-13.6	0	-3.6
1261	TCCTTCAGATACAGGTAACC SEQ ID NO:177	-14.9	-23.3	68.2	-7.9	-0.1	-3.8
1279	TCCTATGCCCCAGAACCGTC SEQ ID NO:178	-14.9	-30	78.3	-15.1	0	-3
125	CCGCATAATTATTGCTCCAG SEQ ID NO:179	-14.8	-24	67	-7.9	-1.2	-8.4
768	GATTGTAAGTATCCTACTTT SEQ ID NO:180	-14.8	-20.1	62.2	-3.8	-1.4	-5.1
771	ATGGATTGTAAGTATCCTAC SEQ ID NO:181	-14.8	-20.2	62.1	-3.8	-1.6	-5.2
777	GATGTTATGGATTGTAAGTA SEQ ID NO:182	-14.8	-18.6	58.9	-3.8	0	-2.2
1649	TTGAAAATTACCCGAAGTCA SEQ ID NO:183	-14.8	-19	56.6	-4.2	0	-5.7
468	GTTACTGAATATTGGAAGAA SEQ ID NO:184	-14.7	-16.8	53.5	-2.1	0	-4.6
680	AGAAAGTTCCTAAAATGTTG SEQ ID NO:185	-14.7	-16.7	53	-2	0	-3.7
773	TTATGGATTGTAAGTATCCT SEQ ID NO:186	-14.7	-20.1	61.8	-3.8	-1.6	-5.2
920	TAGCTCCCTCTTTGGTTGAC SEQ ID NO:187	-14.7	-26.5	77	-11.8	0	-6.2
1271	CCCAGAACCGTCCTTCAGAT SEQ ID NO:188	-14.7	-27.9	74.6	-12.7	-0.2	-3.4
1281	TTTCCTATGCCCCAGAACCG SEQ ID NO:189	-14.7	-28.6	74.3	-13.9	0	-3
1418	ACTTGCACTAACACATTTAT SEQ ID NO:190	-14.7	-19.5	59.4	-4.8	0	-5
1609	GGTCCCTCTGTTGCTCATT SEQ ID NO:191	-14.7	-28.3	81.9	-13.6	0	-3.6
481	GTTGGAAGACTTGTTACTG SEQ ID NO:192	-14.6	-21.5	65.1	-6.9	0	-3.1
767	ATTGTAAGTATCCTACTTTT SEQ ID NO:193	-14.6	-19.6	61.2	-3.8	-1.1	-4.8
775	TGTTATGGATTGTAAGTATC SEQ ID NO:194	-14.6	-18.4	58.9	-3.8	0	-2.5
997	CTTCATTCCATATCCCAACA SEQ ID NO:195	-14.6	-24.3	68.4	-9.7	0	-2
1604	CTCTGTTGCTCATTTTGA SEQ ID NO:196	-14.6	-22.4	68.4	-7.8	0	-3.2

position	oligo	kcal/ mol	kcal/ mol	deg C	kcal/ mol	kcal/mol	kcal/mol
		total binding	duplex formation	Tm of Duplex	target structure	Intra- molecular oligo	Inter- molecular oligo
1610	AGGTCCCTCTGTTGCTCATT SEQ ID NO:197	-14.6	-28.2	81.8	-13.6	0	-4
1642	TTCACCGAAGTCACAGCACT SEQ ID NO:198	-14.6	-24.9	70.3	-10.3	0	-4.1
1904	CATTCACTCTGTTGGCC SEQ ID NO:199	-14.6	-24.8	71.3	-8.4	-1.8	-7
2000	GTATCTTGTCTTTTATT SEQ ID NO:200	-14.6	-19.2	62.2	-4.6	0	-0.9
933	CTTCAGCTTTCCTAGCTCC SEQ ID NO:201	-14.5	-28.5	81.4	-12.6	-1.3	-7.8
1534	CATGCCTCAGATGTTTGAAA SEQ ID NO:202	-14.5	-21.7	63.6	-7.2	0	-3.3
1711	TTTCTGCTGAAAATTGATTC SEQ ID NO:203	-14.5	-17.9	56.2	-2.3	-1	-8.6
1791	ATCTAGTACAACAGTCCTGT SEQ ID NO:204	-14.5	-22.7	68.6	-8.2	0	-6.7
681	TAGAAAGTTCCTAAAATGTT SEQ ID NO:205	-14.4	-16.4	52.5	-2	0	-3.7
683	TCTAGAAAGTTCCTAAAATG SEQ ID NO:206	-14.4	-16.4	52.4	-2	0	-5.2
684	ATCTAGAAAGTTCCTAAAAT SEQ ID NO:207	-14.4	-16.4	52.5	-2	0	-6.2
766	TTGTAAGTATCCTACTTTT SEQ ID NO:208	-14.4	-19.7	61.6	-3.8	-1.4	-5.1
911	CTTTGGTTGACCTGTCTCCA SEQ ID NO:209	-14.4	-26.9	77.2	-12	-0.2	-7.3
1034	ACTCCCACCCCTCCCCATC SEQ ID NO:210	-14.4	-36.8	90.4	-22.4	0	-0.5
1533	ATGCCTCAGATGTTTGAAAA SEQ ID NO:211	-14.4	-20.3	60.4	-5.9	0	-3.6
1535	TCATGCCTCAGATGTTTGAA SEQ ID NO:212	-14.4	-22.8	67.2	-8.4	0	-4.4
1699	ATTGATTCTTCTTTTACAAA SEQ ID NO:213	-14.4	-17	54.8	-2.6	0	-3.5
209	AGCAGCCACAGTCGTCGAGC SEQ ID NO:214	-14.3	-29.1	80.6	-14.8	0	-4.9
445	GAATTCAGGCATTTTCCCG SEQ ID NO:215	-14.3	-24.4	68.5	-9.6	-0.1	-4.6
470	TGGTACTGAATATTGGAAG SEQ ID NO:216	-14.3	-18.1	56.5	-3.8	0	-4.6
486	AATCTGTTGGAAGACTTGGT SEQ ID NO:217	-14.3	-21.2	64	-6.9	0	-3.6
529	ATTGCCATCTCCAGATGCCA SEQ ID NO:218	-14.3	-28.1	77.2	-12.9	-0.7	-7.5
532	AATATTGCCATCTCCAGATG SEQ ID NO:219	-14.3	-22.6	65.5	-7.4	-0.8	-7.5
540	TCTCTCACAATATTGCCATC SEQ ID NO:220	-14.3	-22.6	67.1	-7.7	0	-8.5
765	TGTAAGTATCCTACTTTTGT SEQ ID NO:221	-14.3	-19.6	61.1	-3.8	-1.4	-5.1
772	TATGGATTGTAAGTATCCTA SEQ ID NO:222	-14.3	-19.7	60.9	-3.8	-1.6	-5.2
941	ACTGCGGTCTTCAGCTTTGC SEQ ID NO:223	-14.3	-27.3	78.7	-12.3	-0.5	-6
1031	CCCACCCCTCCCCATCTTC SEQ ID NO:224	-14.3	-36.7	90.2	-22.4	0	-0.5
1422	GATGACTTGCACTAACACAT SEQ ID NO:225	-14.3	-20.8	61.7	-6.5	0	-5
1593	ATTTTTTGACATTTTTTGAA SEQ ID NO:226	-14.3	-16.4	53.3	-2.1	0	-2.4

position	oligo	kcal/ mol	kcal/ mol	deg C	kcal/ mol	kcal/mol	kcal/mol
		total binding	duplex form- ation	Tm of Duplex	target struc- ture	Intra- molecular oligo	Inter- molecular oligo
1607	TCCCTCTGTGCTCATTTTT SEQ ID NO:227	-14.3	-26.1	76.2	-11.8	0	-3.6
211	GCAGCAGCCACAGTCGTCGA SEQ ID NO:228	-14.2	-29.8	81.3	-14.6	-0.9	-5.2
392	AGGTCTCTCTGCAATCCATC SEQ ID NO:229	-14.2	-25.6	75.8	-11.4	0	-4.9
485	ATCTGTTGGAAGACTTGGTT SEQ ID NO:230	-14.2	-22	66.6	-6.9	-0.7	-3.6
776	ATGTTATGGATTGTAAGTAT SEQ ID NO:231	-14.2	-18	57.5	-3.8	0	-1.8
1705	CTGAAAATTGATTCTTCTTT SEQ ID NO:232	-14.2	-17.1	54.5	-2.3	-0.3	-4.9
1785	TACAACAGTCTCTGTTTGTGC SEQ ID NO:233	-14.2	-23.7	70.2	-8.4	-1	-8.7
113	TGCTCCAGGCGGCCACCAGG SEQ ID NO:234	-14.1	-33.4	86.2	-17.7	-1.5	-10.2
234	CCCCGCCCTGCAGCGCACAC SEQ ID NO:235	-14.1	-36.2	87.1	-20.4	-1.7	-10.5
472	CTTGGTTACTGAATATTGGA SEQ ID NO:236	-14.1	-19.8	60.5	-5.7	0	-4.6
528	TTGCCATCTCCAGATGCCAT SEQ ID NO:237	-14.1	-28.1	77.2	-12.9	-1	-7.8
685	TATCTAGAAAGTTCTTAAAA SEQ ID NO:238	-14.1	-16.1	51.9	-2	0	-6.2
1650	ATTGAAAATTCACCGAAGTC SEQ ID NO:239	-14.1	-18.3	55.4	-4.2	0	-5.7
124	CGCATAATTATTGCTCCAGG SEQ ID NO:240	-14	-23.2	65.9	-7.9	-1.2	-8.4
480	TTGGAAGACTTGGTTACTGA SEQ ID NO:241	-14	-20.9	63.2	-6.9	0	-3.3
690	TGCTATATCTAGAAAGTTCC SEQ ID NO:242	-14	-20	61.5	-6	0	-6.2
871	ATTTTTAGTTCTTCAGTGTT SEQ ID NO:243	-14	-20.4	65.7	-6.4	0	-4.1
1641	TCACCGAAGTCACAGCACTT SEQ ID NO:244	-14	-24.9	70.3	-10.3	-0.3	-4.7
1648	TGAAAATTCACCGAAGTCAC SEQ ID NO:245	-14	-19.1	56.8	-5.1	0	-5.4
378	TCCATCCCGAAGGTGCCGTA SEQ ID NO:246	-13.9	-30.1	77.9	-14.9	-1.2	-6.2
484	TCTGTTGGAAGACTTGGTTA SEQ ID NO:247	-13.9	-21.7	66.1	-6.9	-0.7	-3.4
1268	AGAACCGTCCTTCAGATACA SEQ ID NO:248	-13.9	-23.8	67.7	-9.4	-0.2	-3.6
1345	AAAATACTTCTTAGATTAT SEQ ID NO:249	-13.9	-14.4	48.9	0	-0.2	-3.8
1640	CACCGAAGTCACAGCACTTA SEQ ID NO:250	-13.9	-24.2	68.3	-10.3	0.1	-4.6
1698	TTGATTCTTCTTTTACAAAC SEQ ID NO:251	-13.9	-17.2	55.3	-3.3	0	-3
1713	GTTTTCTGCTGAAAATTGAT SEQ ID NO:252	-13.9	-18.7	57.8	-2.3	-2.5	-11.4
1714	TGTTTTCTGCTGAAAATTGA SEQ ID NO:253	-13.9	-18.7	57.7	-2.3	-2.5	-11.4
1782	AACAGTCCTGTTTGTGCTAA SEQ ID NO:254	-13.9	-23	68.1	-8.2	-0.7	-8.1
676	AGTTCCTAAAATGTTGGCTG SEQ ID NO:255	-13.8	-21.4	63.5	-7.6	0	-3.9
789	TTCAGTCATATGGATGTTAT SEQ ID NO:256	-13.8	-20	62.7	-5.5	-0.4	-6.7

position	oligo	kcal/ mol	kcal/ mol	deg C	kcal/ mol	kcal/mol	kcal/mol
		total binding	duplex formation	Tm of Duplex	target structure	Intra- molecular oligo	Inter- molecular oligo
1010	CCTGCTCTTAAGTCTTCATT SEQ ID NO:257	-13.8	-23.8	71	-10	0	-6
1273	GCCCCAGAACCGTCCTTCAG SEQ ID NO:258	-13.8	-31.1	80.6	-16.8	-0.2	-3.4
1355	ACCAGTGGGTAAAATACTTC SEQ ID NO:259	-13.8	-20.6	61.6	-5.8	-0.9	-8.2
1536	ATCATGCCTCAGATGTTTGA SEQ ID NO:260	-13.8	-23.5	69.5	-9.7	0	-4.4
1611	AAGGTCCCTCTGTTGCTCAT SEQ ID NO:261	-13.8	-27.4	78.6	-13.6	0	-5.3
154	ACTGCTGTACAGTGTGTGAG SEQ ID NO:262	-13.7	-24.1	72.7	-9.1	-1.2	-6.4
204	CCACAGTCGTCGAGCACTGT SEQ ID NO:263	-13.7	-27.8	77	-12.2	-1.8	-11
236	CTCCCCGCCCTGCAGCGCAC SEQ ID NO:264	-13.7	-36.6	89.1	-21.4	-1.2	-10.5
366	GTGCCGTAGGGACAGTCTTT SEQ ID NO:265	-13.7	-27.3	78.3	-12	-1.5	-8.4
395	TGCAGGTCTCTCTGCAATCC SEQ ID NO:266	-13.7	-27	78.4	-9.8	-3.5	-9.5
482	TGTTGGAAGACTTGTTACT SEQ ID NO:267	-13.7	-21.5	65.1	-6.9	-0.7	-3.8
483	CTGTTGGAAGACTTGTTAC SEQ ID NO:268	-13.7	-21.5	65.1	-6.9	-0.7	-3.3
876	ATTGCATTTTTAGTTCTTCA SEQ ID NO:269	-13.7	-20.5	64.3	-6.8	0	-5.1
995	TCATTCCATATCCCAACATT SEQ ID NO:270	-13.7	-23.4	66.6	-9.7	0	-2
996	TTCATTCCATATCCCAACAT SEQ ID NO:271	-13.7	-23.4	66.6	-9.7	0	-2
1417	CTTGCACTAACACATTTATT SEQ ID NO:272	-13.7	-19.4	59.2	-5.7	0	-5
1790	TCTAGTACAACAGTCCTGTT SEQ ID NO:273	-13.7	-22.8	69	-8.2	-0.7	-8.1
1913	TTCCACACACATTCACAACT SEQ ID NO:274	-13.7	-22.4	64.9	-8.7	0	-1
188	CTGTCCTCTTGCAGCGCGGG SEQ ID NO:275	-13.6	-30.9	82.9	-16.4	-0.6	-9
325	AAAAGGATCCTCCCCATTAG SEQ ID NO:276	-13.6	-23.9	66.3	-9.1	-0.9	-9.9
675	GTTCTTAAATGTTGGCTGT SEQ ID NO:277	-13.6	-22.6	66.4	-9	0	-3.9
758	ATCCTACTTTTGTGTTTCG SEQ ID NO:278	-13.6	-21.3	65.7	-7.7	0	-2.2
788	TCAGTCATATGGATGTTATG SEQ ID NO:279	-13.6	-19.9	62.2	-6.3	0.2	-6.7
1275	ATGCCCCAGAACCGTCCTTC SEQ ID NO:280	-13.6	-30.4	79.1	-16.8	0	-3
1346	TAAAATACTTCTTAGATTTA SEQ ID NO:281	-13.6	-14.1	48.4	0	-0.2	-3.8
1647	GAAAATTCACCGAAGTCACA SEQ ID NO:282	-13.6	-19.8	58	-6.2	0	-4.1
1786	GTACAACAGTCCTGTTTGTG SEQ ID NO:283	-13.6	-23.1	69.2	-8.4	-1	-8.7
123	GCATAATTATGCTCCAGGC SEQ ID NO:284	-13.5	-24.2	69.9	-9.8	-0.7	-8.1
379	ATCCATCCCAGAGGTGCCGT SEQ ID NO:285	-13.5	-30.4	78.4	-15.6	-1.2	-6.2
783	CATATGGATGTTATGGATTG SEQ ID NO:286	-13.5	-19.1	58.9	-5.6	0	-5.2

position	oligo	kcal/ mol	kcal/ mol	deg C	kcal/ mol	kcal/mol	kcal/mol
		total binding	duplex formation	Tm of Duplex	target structure	Intra- molecular oligo	Inter- molecular oligo
1041	ATTTCCCACTCCCACCCCT SEQ ID NO:287	-13.5	-34.6	86.4	-21.1	0	-0.3
1612	TAAGGTCCCTCTGTGCTCA SEQ ID NO:288	-13.5	-27.1	78.1	-13.6	0	-4.7
1978	ACAATAATAAACATGTCCTT SEQ ID NO:289	-13.5	-17	53.1	-3.5	0	-6.9
471	TTGGTTACTGAATATTGGAA SEQ ID NO:290	-13.4	-18.2	56.7	-4.8	0	-4.6
542	CTTCTCTCACAAATTGCCA SEQ ID NO:291	-13.4	-23.2	67.9	-9.2	0	-8.5
686	ATATCTAGAAAGTTCCTAAA SEQ ID NO:292	-13.4	-16.8	53.7	-3.4	0	-6.2
873	GCATTTTTAGTTCTTCAGTG SEQ ID NO:293	-13.4	-21.6	67.7	-8.2	0	-3.5
907	GGTTGACCTGTCTCCATGTA SEQ ID NO:294	-13.4	-26.7	77.4	-13.3	0	-5.9
1423	AGATGACTTGCCTAACACA SEQ ID NO:295	-13.4	-20.8	62	-7.4	0	-5
1427	GGGAAGATGACTTGCACTAA SEQ ID NO:296	-13.4	-21.3	62.7	-7	-0.7	-5.3
1601	TGTTGCTCATTTTTTGACAT SEQ ID NO:297	-13.4	-21.1	64.5	-7.2	-0.2	-3.6
1704	TGAAAATTGATTCTTCTTTT SEQ ID NO:298	-13.4	-16.3	52.9	-2.3	-0.3	-4.9
1784	ACAACAGTCCTGTTGTGCT SEQ ID NO:299	-13.4	-24.9	72.8	-10.5	-0.9	-8.4
1902	TTCACAACCTCTGTTGGCCAA SEQ ID NO:300	-13.4	-24.1	69	-8.8	-1.8	-10.8
1977	CAATAATAAACATGTCCTTT SEQ ID NO:301	-13.4	-16.9	52.9	-3.5	0	-6.9
792	GTGTTCAATCATATGGATGT SEQ ID NO:302	-13.3	-22.6	69.8	-8.6	-0.4	-6.1
870	TTTTTAGTTCTTCAGTGTTA SEQ ID NO:303	-13.3	-20.1	65.1	-6.8	0	-4.1
935	GTCTTCAGCTTTCCTAGCT SEQ ID NO:304	-13.3	-27.7	81.6	-13.1	-1.2	-7.7
1038	TCCCACTCCCACCCCTCCC SEQ ID NO:305	-13.3	-38.8	93.4	-25.5	0	0
1712	TTTCTGCTGAAAATTGATT SEQ ID NO:306	-13.3	-17.6	55.2	-2.3	-2	-10.6
1715	ATGTTTTCTGCTGAAAATTG SEQ ID NO:307	-13.3	-18.1	56.5	-2.3	-2.5	-11.4
1789	CTAGTACAACAGTCCTGTTT SEQ ID NO:308	-13.3	-22.5	67.8	-8.2	-0.9	-8.4
478	GGAAGACTTGGTTACTGAAT SEQ ID NO:309	-13.2	-20.1	60.9	-6.9	0	-3.1
479	TGGAAGACTTGGTTACTGAA SEQ ID NO:310	-13.2	-20.1	60.8	-6.9	0	-3.1
531	ATATTGCCATCTCCAGATGC SEQ ID NO:311	-13.2	-25.1	72	-10.8	-1	-7.8
908	TGGTTGACCTGTCTCCATGT SEQ ID NO:312	-13.2	-27	77.8	-13.3	-0.2	-7.2
1792	CATCTAGTACAACAGTCCTG SEQ ID NO:313	-13.2	-22.2	66.5	-9	0	-5.3
126	ACCGCATAATTATTGCTCCA SEQ ID NO:314	-13.1	-24.2	67.3	-9.8	-1.2	-8.4
687	TATATCTAGAAAGTTCCTAA SEQ ID NO:315	-13.1	-17.2	54.9	-4.1	0	-6.2
1497	GTTTTATTCTAACCATTTT SEQ ID NO:316	-13.1	-18.9	59.2	-5.8	0	-2.3

position	oligo	kcal/ mol	kcal/ mol	deg C	kcal/ mol	kcal/mol	kcal/mol
		total binding	duplex formation	Tm of Duplex	target structure	Intra- molecular oligo	Inter- molecular oligo
1542	AAATTATCATGCCTCAGAT SEQ ID NO:317	-13.1	-20	60.2	-6.9	0	-4.6
1592	TTTTTTGACATTTTTTGAAA SEQ ID NO:318	-13.1	-15.7	51.6	-2.1	-0.1	-2.5
1779	AGTCCTGTTTGTGCTAAGAT SEQ ID NO:319	-13.1	-23.4	70.3	-10.3	0	-3.6
114	TTGCTCCAGGCGGCCACCAG SEQ ID NO:320	-13	-32.3	84.2	-17.7	-1.4	-10.2
115	ATTGCTCCAGGCGGCCACCA SEQ ID NO:321	-13	-32.3	83.8	-17.7	-1.4	-10.2
324	AAAGGATCCTCCCCATTAGA SEQ ID NO:322	-13	-25.2	69.6	-11	-0.9	-9.9
541	TTCTCTCACAATATTGCCAT SEQ ID NO:323	-13	-22.3	65.9	-8.7	0	-8.5
1019	CCATCTTCTCCTGCTCTTAA SEQ ID NO:324	-13	-25.8	74.3	-12.8	0	-3.6
1342	ATACTTCTTAGATTATCTC SEQ ID NO:325	-13	-18.2	59.3	-4.3	-0.7	-5.1
1358	ACCACCAGTGGGTAAAATAC SEQ ID NO:326	-13	-22.1	63.4	-7.8	-1.2	-9
111	CTCCAGGCGGCCACCAGGTG SEQ ID NO:327	-12.9	-32.8	85.5	-19	-0.4	-9.4
155	CACTGCTGTACAGTGTGA SEQ ID NO:328	-12.9	-24.8	73.6	-9.1	-2.8	-8.5
391	GGTCTCTCTGCAATCCATCC SEQ ID NO:329	-12.9	-27.6	79.2	-14.7	0	-4.9
688	CTATATCTAGAAAGTTCCTA SEQ ID NO:330	-12.9	-18.8	58.8	-5.9	0	-5.7
872	CATTTTTAGTTCTTCAGTGT SEQ ID NO:331	-12.9	-21	66.6	-8.1	0	-4.1
1186	CTCAAATTTCCATAAGCTTC SEQ ID NO:332	-12.9	-20.1	60.7	-7.2	0	-6.8
1276	TATGCCCCAGAACCGTCCTT SEQ ID NO:333	-12.9	-29.7	77	-16.8	0	-3
1282	GTTTCCTATGCCCCAGAACCC SEQ ID NO:334	-12.9	-29	77.7	-16.1	0	-3
1540	ATTTATCATGCCTCAGATGT SEQ ID NO:335	-12.9	-22.6	67.6	-9.7	0	-4.4
112	GCTCCAGGCGGCCACCAGGT SEQ ID NO:336	-12.8	-34.6	90	-20.4	-1.1	-10.2
212	GGCAGCAGCCACAGTCGTCG SEQ ID NO:337	-12.8	-30.4	82.5	-14.9	-2.7	-9.6
439	CAGGCATTTTCCCGTCCCCC SEQ ID NO:338	-12.8	-33.5	85.4	-20.2	-0.1	-4
790	GTTTCAGTCATATGGATGTTA SEQ ID NO:339	-12.8	-21.2	66.1	-7.7	-0.4	-6.7
795	CAAGTGTTTCAGTCATATGGA SEQ ID NO:340	-12.8	-21.4	65.6	-8.6	0	-6.2
994	CATTCATATCCCAACATTA SEQ ID NO:341	-12.8	-22.7	64.6	-9.9	0	-2
1431	GGTAGGGAAGATGACTTGCA SEQ ID NO:342	-12.8	-23.3	68.4	-9.6	-0.7	-5.9
1543	TAAATTTATCATGCCTCAGA SEQ ID NO:343	-12.8	-19.7	59.7	-6.9	0	-5.5
1590	TTTGTGACATTTTTTGAAATC SEQ ID NO:344	-12.8	-15.9	52.1	-2.1	-0.9	-3.8
1976	AATAATAAACATGTCCTTTT SEQ ID NO:345	-12.8	-16.3	52	-3.5	0	-6.9
322	AGGATCCTCCCCATTAGAAG SEQ ID NO:346	-12.7	-25.9	72	-12.1	-0.9	-9.2

position	oligo	kcal/ mol	kcal/ mol	deg C	kcal/ mol	kcal/mol	kcal/mol
		total binding	duplex formation	Tm of Duplex	target structure	Intra- molecular oligo	Inter- molecular oligo
738	GATCCACCATGCATCACAAT SEQ ID NO:347	-12.7	-24.4	68.2	-11.7	0	-6.6
785	GTCATATGGATGTTATGGAT SEQ ID NO:348	-12.7	-20.6	63.3	-7.2	-0.4	-6.2
942	CACTGCGGTCTTCAGCTTTG SEQ ID NO:349	-12.7	-26.2	75.3	-12.8	-0.5	-6.2
1187	ACTCAAATTTCCATAAGCTT SEQ ID NO:350	-12.7	-19.9	59.8	-7.2	0	-6.4
1278	CCTATGCCCCAGAACCGTCC SEQ ID NO:351	-12.7	-31.6	79.8	-18.9	0	-2.6
1428	AGGGAAGATGACTTGCACTA SEQ ID NO:352	-12.7	-22	65.1	-8.4	-0.7	-5.3
1979	AACAATAATAACATGTCCT SEQ ID NO:353	-12.7	-16.2	51.2	-3.5	0	-6.9
735	CCACCATGCATCACAATTTG SEQ ID NO:354	-12.6	-23.6	66.1	-11	0	-6.4
761	AGTATCCTACTTTTTGTGTTT SEQ ID NO:355	-12.6	-20.9	65.2	-7.8	-0.2	-2.9
992	TTCCATATCCCAACATTAAT SEQ ID NO:356	-12.6	-21.3	61.5	-8.7	0	-3.8
993	ATTCCATATCCCAACATTAA SEQ ID NO:357	-12.6	-21.3	61.5	-8.7	0	-2.6
1127	TTTTGACTTTTCCCAAAGCC SEQ ID NO:358	-12.6	-23.8	67.4	-9.8	-1.3	-6.3
1277	CTATGCCCCAGAACCGTCCT SEQ ID NO:359	-12.6	-30.5	78.4	-17.9	0	-3
1591	TTTTTGACATTTTTTGAAAT SEQ ID NO:360	-12.6	-15.6	51.3	-2.1	-0.7	-3.1
1594	CATTTTTTGACATTTTTTGA SEQ ID NO:361	-12.6	-17.8	56.5	-5.2	0	-2.4
1778	GTCCTGTTTGTGCTAAGATT SEQ ID NO:362	-12.6	-23.5	70.4	-10.9	0	-3.6
1975	ATAATAAACATGTCCTTTTA SEQ ID NO:363	-12.6	-16.7	53.2	-4.1	0	-6.9
15	GTGGTCTTTGCTGGTGGGAA SEQ ID NO:364	-12.5	-26.5	77.3	-14	0	-3.6
331	TTACCAAAAAGGATCCTCCC SEQ ID NO:365	-12.5	-25.5	69.6	-11.8	-0.9	-9.9
473	ACTTGGTTACTGAATATTGG SEQ ID NO:366	-12.5	-19.4	59.8	-6.9	0	-4.6
536	TCACAATATTGCCATCTCCA SEQ ID NO:367	-12.5	-24	68.5	-10.9	0	-8.5
578	TTACGGGAGACCCGGCAGCA SEQ ID NO:368	-12.5	-29.6	77.1	-13.4	-3.7	-12.1
1341	TACTTCTTAGATTTATCTCT SEQ ID NO:369	-12.5	-19.1	61.4	-5.7	-0.7	-5.1
1528	TCAGATGTTTGAAAACCTTA SEQ ID NO:370	-12.5	-18.5	56.9	-5.5	-0.1	-5.7
1696	GATTCTTCTTTTACAAACCT SEQ ID NO:371	-12.5	-20	60.8	-7.5	0	-1.9
1697	TGATTCTTCTTTTACAAACC SEQ ID NO:372	-12.5	-19.1	58.8	-6.6	0	-2.6
377	CCATCCGAAGGTGCCGTAG SEQ ID NO:373	-12.4	-29.7	76.7	-16.4	-0.7	-6.2
588	CATTTCTCATTACGGGAGA SEQ ID NO:374	-12.4	-23.7	68	-10.7	-0.3	-4.2
796	ACAAGTGTTCAAGTCATATGG SEQ ID NO:375	-12.4	-21	64.7	-8.6	0	-6.2
875	TTGCATTTTGTAGTTCTTCAG SEQ ID NO:376	-12.4	-20.5	64.6	-8.1	0	-5.1

position	oligo	kcal/ mol	kcal/ mol	deg C	kcal/ mol	kcal/mol	kcal/mol
		total binding	duplex form- ation	Tm of Duplex	target struc- ture	Intra- molecular oligo	Inter- molecular oligo
1426	GGAAGATGACTTGCACTAAC SEQ ID NO:377	-12.4	-20.3	60.8	-7	-0.7	-5.3
1595	TCATTTTGTGACATTTTTTG SEQ ID NO:378	-12.4	-17.6	56.5	-5.2	0	-2.5
1905	ACATTCACTCTGTTGGC SEQ ID NO:379	-12.4	-23	68.2	-8.8	-1.8	-7
1980	GAACAATAATAACATGTCC SEQ ID NO:380	-12.4	-15.9	50.6	-3.5	0	-6.9
760	GTATCCTACTTTTGTGTTTC SEQ ID NO:381	-12.3	-21.3	66.6	-9	0	-2.2
763	TAAGTATCCTACTTTTGTGTT SEQ ID NO:382	-12.3	-19.7	61.6	-5.9	-1.4	-5.1
793	AGTGTTCAGTCATATGGATG SEQ ID NO:383	-12.3	-21.4	66.5	-8.6	-0.1	-6.4
1011	TCCTGCTCTTAAGTCTTCAT SEQ ID NO:384	-12.3	-24.1	72.3	-11.8	0	-6
1042	TATTTCCCACTCCCACTCC SEQ ID NO:385	-12.3	-33.4	84.2	-21.1	0	-0.7
1147	GGGGTTTCTGTTGTTTGA SEQ ID NO:386	-12.3	-24.1	73.6	-11.8	0	-1.9
1188	TACTCAAATTTCCATAAGCT SEQ ID NO:387	-12.3	-19.5	59	-7.2	0	-4.8
1269	CAGAACCGTCCCTCAGATAC SEQ ID NO:388	-12.3	-23.8	67.7	-11	-0.2	-3.4
1496	TTTTTATTTCTAACCATTTTC SEQ ID NO:389	-12.3	-18.1	57.5	-5.8	0	-1.4
1783	CAACAGTCTGTTGTGCTA SEQ ID NO:390	-12.3	-24.4	71.6	-11.1	-0.9	-8.4
229	CCCTGCAGCGCACACTCGGC SEQ ID NO:391	-12.2	-32.7	83.8	-19.6	-0.7	-8.5
323	AAGGATCCTCCCCATTAGAA SEQ ID NO:392	-12.2	-25.2	69.6	-11.8	-0.9	-9.9
633	GAGCCTTCTCTCAGAAATCA SEQ ID NO:393	-12.2	-23.4	69	-10.3	-0.7	-5.1
801	CACATACAAGTGTTCAGTCA SEQ ID NO:394	-12.2	-21.4	65.3	-8.6	-0.3	-4.1
864	GTTCTTCAGTGTACTATAC SEQ ID NO:395	-12.2	-20.7	66	-8.5	0	-4.1
869	TTTGTGTTCTTCAGTGTAC SEQ ID NO:396	-12.2	-20.2	65.3	-8	0	-4.1
990	CCATATCCCAACATTAATGT SEQ ID NO:397	-12.2	-22	62.7	-8.7	0	-10.2
1009	CTGCTCTTAAGTCTTCATTC SEQ ID NO:398	-12.2	-22.2	68.8	-10	0	-5.4
1221	TTTTGAAATTGCTCTCAGTT SEQ ID NO:399	-12.2	-20	61.8	-7.8	0	-3.6
1544	ATAAATTTATCATGCCTCAG SEQ ID NO:400	-12.2	-19.1	58.4	-6.9	0	-7.3
1703	GAAAATTGATTCTTCTTTTA SEQ ID NO:401	-12.2	-16	52.4	-3.8	0	-4.1
1906	CACATTCACAACCTGTTGG SEQ ID NO:402	-12.2	-21.9	65.1	-7.9	-1.8	-7
156	TCACTGCTGTACAGTGTG SEQ ID NO:403	-12.1	-24.6	74	-9.1	-3.4	-9.7
689	GCTATATCTAGAAAGTTCCCT SEQ ID NO:404	-12.1	-20.9	63.6	-8.8	0	-6.2
794	AAGTGTTCAGTCATATGGAT SEQ ID NO:405	-12.1	-20.7	64.3	-8.6	0	-6.2
868	TTTAGTTCTTCAGTGTACT SEQ ID NO:406	-12.1	-21	67.1	-8.9	0	-4.1

position	oligo	kcal/ mol	kcal/ mol	deg C	kcal/ mol	kcal/mol	kcal/mol
		total binding	duplex form- ation	Tm of Duplex	target struc- ture	Intra- molecular oligo	Inter- molecular oligo
984	CCCAACATTAATGTACATCA SEQ ID NO:407	-12.1	-20.9	60.8	-7.5	-0.2	-10.5
985	TCCCAACATTAATGTACATC SEQ ID NO:408	-12.1	-20.6	61	-7.5	0.3	-10
1133	GTTTTATTTTGGTCTTTTCCC SEQ ID NO:409	-12.1	-21.9	66.2	-9.8	0	-2
1344	AAATACTTCTTATGATTTATC SEQ ID NO:410	-12.1	-15.5	51.8	-3.4	0	-3.1
1357	CCACCAGTGGGTAAAATACT SEQ ID NO:411	-12.1	-22.8	64.6	-9.5	-1.1	-8.2
1359	AACCACCAGTGGGTAAAATA SEQ ID NO:412	-12.1	-21.2	60.9	-7.8	-1.2	-9
1506	GAGTCATAGGTTTATTCT SEQ ID NO:413	-12.1	-20.5	65.2	-8.4	0	-4.1
1526	AGATGTTTGAAACCTTATA SEQ ID NO:414	-12.1	-17.1	53.9	-4.5	-0.1	-5.7
1608	GTCCCTCTGTTGCTCATTTT SEQ ID NO:415	-12.1	-27.2	79.5	-15.1	0	-3.6
1651	AATTGAAAATTACCGAAGT SEQ ID NO:416	-12.1	-17.2	52.7	-4.2	-0.7	-5.7
1793	ACATCTAGTACACAGTCCT SEQ ID NO:417	-12.1	-22.4	67.2	-10.3	0	-5.3
116	TATTGCTCCAGCGGCCACC SEQ ID NO:418	-12	-31.3	82.3	-17.7	-1.4	-10.2
301	CTGACACCTCAGCCCCGGGC SEQ ID NO:419	-12	-33.4	85.2	-18.8	-1.4	-13.3
535	CACAAATATTGCCATCTCCAG SEQ ID NO:420	-12	-23.6	67.2	-11	0	-8.5
691	ATGCTATATCTAGAAAGTTC SEQ ID NO:421	-12	-18	57.6	-6	0	-6.2
762	AAGTATCCTACTTTTGTTT SEQ ID NO:422	-12	-20.1	62.5	-6.9	-1.1	-4.7
865	AGTTCTTCAGTGTACTATA SEQ ID NO:423	-12	-20.5	65.6	-8.5	0	-4.1
866	TAGTTCTTCAGTGTACTAT SEQ ID NO:424	-12	-20.5	65.6	-8.5	0	-4.1
991	TCCATATCCCAACATTAATG SEQ ID NO:425	-12	-21.2	61.1	-8.7	0	-8.2
1035	CACTCCACCCCCCTCCCCAT SEQ ID NO:426	-12	-37.1	89.5	-25.1	0	-0.3
1146	GGGTTTTCTGGTTGTTTTAT SEQ ID NO:427	-12	-22.9	70.6	-10.9	0	-1.5
1218	TGAAATTGCTCTCAGTTCAA SEQ ID NO:428	-12	-20.1	61.3	-7.4	-0.4	-4.9
1846	TCTTAAATAAGTTCTTCACT SEQ ID NO:429	-12	-17.6	56.4	-5.6	0	-4.9
153	CTGCTGTCACAGTGTGAGG SEQ ID NO:430	-11.9	-25.1	74.9	-12.5	-0.4	-6
367	GGTGCCGTAGGGACAGTCTT SEQ ID NO:431	-11.9	-28.4	80.6	-14.9	-1.5	-8.4
475	AGACTTGGTTACTGAATATT SEQ ID NO:432	-11.9	-18.8	58.8	-6.9	0	-4.6
632	AGCCTTCTCTCAGAAATCAC SEQ ID NO:433	-11.9	-23	68.2	-10.3	-0.6	-5.1
909	TTGGTTGACCTGTCTCCATG SEQ ID NO:434	-11.9	-25.9	74.6	-13.3	-0.4	-7.6
1193	TTTGTTACTCAAATTTCCAT SEQ ID NO:435	-11.9	-19.3	59.3	-6.2	-1.1	-4.5
1425	GAAGATGACTTGCACTAACA SEQ ID NO:436	-11.9	-19.8	59.5	-7	-0.7	-5.3

position	oligo	kcal/ mol	kcal/ mol	deg C	kcal/ mol	kcal/mol	kcal/mol
		total binding	duplex form- ation	Tm of Duplex	target struc- ture	Intra- molecular oligo	Inter- molecular oligo
1541	AATTTATCATGCCTCAGATG SEQ ID NO:437	-11.9	-20.7	62.2	-8.8	0	-4.4
1912	TCCACACACATTCCAACTC SEQ ID NO:438	-11.9	-22.7	66	-10.8	0	-1
390	GTCTCTCTGCAATCCATCCC SEQ ID NO:439	-11.8	-28.4	80.1	-16.6	0	-4.9
467	TTACTGAATATTGGAAGAAG SEQ ID NO:440	-11.8	-15.6	50.9	-3.8	0	-4.6
579	ATTACGGGAGACCCGGCAGC SEQ ID NO:441	-11.8	-28.9	76.1	-13.4	-3.7	-11
784	TCATATGGATGTTATGGATT SEQ ID NO:442	-11.8	-19.5	60.4	-7	-0.4	-6.2
910	TTTGGTTGACCTGTCTCCAT SEQ ID NO:443	-11.8	-26	75.2	-13.5	-0.4	-7.6
1220	TTTGAAATTGCTCTCAGTTC SEQ ID NO:444	-11.8	-20.3	62.9	-8.5	0	-3.9
1430	GTAGGGAAGATGACTTGCAC SEQ ID NO:445	-11.8	-22.3	66.3	-9.6	-0.7	-5.3
1495	TTTTATTCTAACCATTITCA SEQ ID NO:446	-11.8	-18.7	58.4	-6.9	0	-1.4
1501	ATAGGTTTTTTATTCTAACCA SEQ ID NO:447	-11.8	-19.5	60.4	-5.5	-2.2	-5.9
302	GCTGACACCTCAGCCCCGGG SEQ ID NO:448	-11.7	-33.4	85.2	-16.7	-3.5	-18.2
398	AGTTGCAGGTCTCTCTGCAA SEQ ID NO:449	-11.7	-25.9	77.3	-9.5	-4.7	-12
435	CATTTTCCCGTCCCCCTGTC SEQ ID NO:450	-11.7	-32.3	84.3	-20.6	0	-2.6
477	GAAGACTTGGTTACTGAATA SEQ ID NO:451	-11.7	-18.6	57.8	-6.9	0	-3.1
527	TGCCATCTCCAGATGCCATG SEQ ID NO:452	-11.7	-28	76.7	-15.2	-1	-7.8
543	TCTTCTCTCACAATATTGCC SEQ ID NO:453	-11.7	-22.9	68.3	-10.6	0	-8.5
943	TCACTGCGGTCTTCAGCTTT SEQ ID NO:454	-11.7	-26.6	77.3	-14.2	-0.4	-6.2
1219	TTGAAATTGCTCTCAGTTCA SEQ ID NO:455	-11.7	-20.9	63.8	-8.5	-0.4	-5
1259	CTTCAGATACAGGTAACCCG SEQ ID NO:456	-11.7	-23.7	66.9	-11	-0.9	-4.5
1274	TGCCCCAGAACCGTCCTTCA SEQ ID NO:457	-11.7	-31.1	80.1	-18.9	-0.2	-3.4
1356	CACCACTGGGTAAAATACTT SEQ ID NO:458	-11.7	-20.9	61.4	-8	-1.1	-8.2
1360	AAACCACCAGTGGGTAAAAT SEQ ID NO:459	-11.7	-20.8	59.6	-7.8	-1.2	-9
1639	ACCGAAGTCACAGCACTTAT SEQ ID NO:460	-11.7	-23.5	67.1	-11.1	-0.5	-4.6
1787	AGTACAACAGTCCTGTTTGT SEQ ID NO:461	-11.7	-23.1	69.6	-10.5	-0.8	-8.3
110	TCCAGGCGGCCACCAGGTGT SEQ ID NO:462	-11.6	-33.1	87.1	-19.9	-1.4	-10.2
160	GCACTCACTGCTGTACAGT SEQ ID NO:463	-11.6	-26.9	78.8	-14	-1.2	-6.3
187	TGTCCTCTTGCAGCGGGGC SEQ ID NO:464	-11.6	-31.8	85.4	-19.3	-0.6	-9.1
250	GCGGTAGCAAGTTTCTCCCC SEQ ID NO:465	-11.6	-29.6	81	-17	-0.9	-4.5
799	CATACAAGTGTTTCAGTCATA SEQ ID NO:466	-11.6	-20.2	62.8	-8.6	0	-3.7

position	oligo	kcal/ mol	kcal/ mol	deg C	kcal/ mol	kcal/mol	kcal/mol
		total binding	duplex form- ation	Tm of Duplex	target struc- ture	Intra- molecular oligo	Inter- molecular oligo
800	ACATACAAGTGTTCAGTCAT SEQ ID NO:467	-11.6	-20.7	64	-8.6	-0.1	-3.7
903	GACCTGTCTCCATGTAAGAT SEQ ID NO:468	-11.6	-24.1	70.1	-12.5	0	-5.5
904	TGACCTGTCTCCATGTAAGA SEQ ID NO:469	-11.6	-24.1	70	-12.5	0	-5.3
1012	CTCCTGCTCTTAAGTCTTCA SEQ ID NO:470	-11.6	-25	74.5	-13.4	0	-6
1132	TTTTATTTTGACTTTTCCCA SEQ ID NO:471	-11.6	-21.4	64.2	-9.8	0	-1.7
1204	GTTCAAAGCTGTTTGTTACT SEQ ID NO:472	-11.6	-21.2	65.1	-8.1	-1.4	-6
1500	TAGGTTTTTATTCTAACCAT SEQ ID NO:473	-11.6	-19.5	60.4	-5.7	-2.2	-5.9
1911	CCACACACATTCCAACTCT SEQ ID NO:474	-11.6	-23.2	66.4	-11.6	0	-1
127	CACCGCATAATTATTGCTCC SEQ ID NO:475	-11.5	-24.2	67.3	-11.4	-1.2	-8.4
205	GCCACAGTCGTCGAGCACTG SEQ ID NO:476	-11.5	-28.4	77.9	-15.6	-1.1	-9.6
352	GTCTTTGCAGATACCAAAC SEQ ID NO:477	-11.5	-22.1	64.9	-10	-0.3	-4.9
397	GTTGCAGGTCTCTCTGCAAT SEQ ID NO:478	-11.5	-25.9	76.9	-9.5	-4.9	-12.2
487	AAATCTGTTGGAAGACTTGG SEQ ID NO:479	-11.5	-19.3	58.9	-6.9	-0.7	-3.6
1145	GGTTTTCTGGTTGTTTTATT SEQ ID NO:480	-11.5	-21.8	68.2	-10.3	0	-1.5
1416	TTGCACTAACACATTTATTT SEQ ID NO:481	-11.5	-18.6	57.6	-7.1	0	-5
1429	TAGGGAAGATGACTTGCACT SEQ ID NO:482	-11.5	-22	65.1	-10	-0.1	-5
1529	CTCAGATGTTTGAAAACCTT SEQ ID NO:483	-11.5	-19.7	59.3	-7.7	-0.1	-5.7
228	CCTGCAGCGCACACTCGGCA SEQ ID NO:484	-11.4	-31.4	81.5	-19.1	-0.7	-8.8
233	CCCGCCCTGCAGCGCACACT SEQ ID NO:485	-11.4	-35.1	85.8	-22	-1.7	-10.5
568	CCCGGCAGCATTTCTTTTCA SEQ ID NO:486	-11.4	-29	79.5	-17.6	0	-6.3
577	TACGGGAGACCCGGCAGCAT SEQ ID NO:487	-11.4	-29.5	76.7	-14.4	-3.7	-12.1
877	AATTGCATTTTGTCTTTC SEQ ID NO:488	-11.4	-19.1	60.7	-7.7	0	-5.1
1039	TTCCCACTCCCACCCCTCC SEQ ID NO:489	-11.4	-36.9	90.9	-25.5	0	0
1202	TCAAAGCTGTTTGTACTCA SEQ ID NO:490	-11.4	-21	64.2	-8.1	-1.4	-6
1515	AACCTTATAGAGTCATAGGT SEQ ID NO:491	-11.4	-20.9	64	-8.6	-0.8	-6.3
1602	CTGTTGCTCATTTTGTGACA SEQ ID NO:492	-11.4	-22	66.5	-10.1	-0.1	-3.6
266	CCATGCCTGAGACTGTGCGG SEQ ID NO:493	-11.3	-28.7	77	-16.8	-0.3	-4.2
317	CCTCCCCATTAGAAGGCTGA SEQ ID NO:494	-11.3	-28.2	76	-16.9	0	-3.7
530	TATTGCCATCTCCAGATGCC SEQ ID NO:495	-11.3	-27.1	75.6	-14.7	-1	-7.8
692	TATGCTATATCTAGAAAGTT SEQ ID NO:496	-11.3	-17.3	55.6	-6	0	-6.2

position	oligo	kcal/ mol	kcal/ mol	deg C	kcal/ mol	kcal/mol	kcal/mol
		total binding	duplex formation	Tm of Duplex	target structure	Intra- molecular oligo	Inter- molecular oligo
693	TTATGCTATATCTAGAAAGT SEQ ID NO:497	-11.3	-17.3	55.6	-6	0	-6.2
759	TATCCTACTTTTTGTTTCT SEQ ID NO:498	-11.3	-21	65.2	-9.7	0	-2.2
787	CAGTCATATGGATGTTATGG SEQ ID NO:499	-11.3	-20.7	63.4	-8.7	-0.4	-6.2
874	TGCATTTTTAGTTCTTCAGT SEQ ID NO:500	-11.3	-21.6	67.7	-10.3	0	-4.7
1413	CACTAACACATTTATTTATA SEQ ID NO:501	-11.3	-16.1	52.3	-4.8	0	-1.7
1527	CAGATGTTTGAAAACCTTAT SEQ ID NO:502	-11.3	-18.1	55.6	-6.8	0.6	-5
1589	TTTGACATTTTTTGAAATCC SEQ ID NO:503	-11.3	-17.8	55.6	-5.5	-0.9	-3.8
1907	ACACATTCACAACCTCTGTTG SEQ ID NO:504	-11.3	-20.9	63.1	-8.1	-1.4	-6.5
118	ATTATTGCTCCAGGCGGCCA SEQ ID NO:505	-11.2	-29.2	78.7	-16.4	-1.4	-10.2
332	CTTCACCAAAAAGGATCCTCC SEQ ID NO:506	-11.2	-24.4	68	-12.1	-0.5	-9.9
489	ACAAATCTGTTGGAAGACTT SEQ ID NO:507	-11.2	-19	58.2	-6.9	-0.8	-4.4
631	GCCTTCTCTCAGAAATCACA SEQ ID NO:508	-11.2	-23.7	69.1	-11.7	-0.6	-4.6
1192	TTGTTACTCAAATTTCCATA SEQ ID NO:509	-11.2	-18.9	58.4	-7.2	-0.1	-4.5
1194	GTTTGTTACTCAAATTTCCA SEQ ID NO:510	-11.2	-20.5	62.4	-7.7	-1.6	-4.6
1343	AATACTTCTTAGATTTATCT SEQ ID NO:511	-11.2	-17.1	55.8	-5.2	-0.5	-4.7
1644	AATTCACCGAAGTCACAGCA SEQ ID NO:512	-11.2	-23.1	65.7	-11.9	0	-4.1
1847	TTCTTAAATAAGTTCTTCAC SEQ ID NO:513	-11.2	-16.8	54.8	-5.6	0	-4.9
1908	CACACATTCACAACCTCTGTT SEQ ID NO:514	-11.2	-21.6	64.4	-9.9	-0.2	-3.1
267	TCCATGCCTGAGACTGTGCG SEQ ID NO:515	-11.1	-27.9	76.2	-16.8	0.4	-4.2
318	TCCTCCCCATTAGAAGGCTG SEQ ID NO:516	-11.1	-28	76.3	-16.9	0	-3.7
446	GGAATTTCAAGCATTTTCCC SEQ ID NO:517	-11.1	-24.8	71	-13	-0.4	-5
476	AAGACTTGTTTACTGAATAT SEQ ID NO:518	-11.1	-18	56.5	-6.9	0	-3.1
589	CCATTTCTCATTACGGGAG SEQ ID NO:519	-11.1	-25.1	70.3	-14	0	-4.2
906	GTTGACCTGTCTCCATGTAA SEQ ID NO:520	-11.1	-24.8	72.1	-13.7	0	-5.1
1008	TGCTCTTAAGTCTTCATTCC SEQ ID NO:521	-11.1	-23.3	70.6	-12.2	0	-6
1237	AACTACATCAGCAGCCTTTT SEQ ID NO:522	-11.1	-23.6	68.7	-12.5	0	-4.5
1256	CAGATACAGGTAACCCGGGA SEQ ID NO:523	-11.1	-25.3	69.3	-12.7	-0.9	-10.7
1257	TCAGATACAGGTAACCCGGG SEQ ID NO:524	-11.1	-25.1	69.6	-12.7	-0.9	-10.2
1499	AGGTTTTTATTCTAACCAT SEQ ID NO:525	-11.1	-19.9	61.3	-6.6	-2.2	-5.9
1512	CTTATAGAGTCATAGGTTTT SEQ ID NO:526	-11.1	-19.7	62.7	-8.6	0	-4.8

position	oligo	kcal/ mol	kcal/ mol	deg C	kcal/ mol	kcal/mol	kcal/mol
		total binding	duplex form- ation	Tm of Duplex	target struc- ture	Intra- molecular oligo	Inter- molecular oligo
1841	AATAAGTTCTTCACTTCAAA SEQ ID NO:527	-11.1	-17	54.4	-4.8	-1	-3.7
488	CAAATCTGTTGGAAGACTTG SEQ ID NO:528	-11	-18.8	57.6	-6.9	-0.7	-3.6
694	CTTATGCTATATCTAGAAAG SEQ ID NO:529	-11	-17	54.6	-6	0	-6.2
1498	GGTTTATTCTAACCATTT SEQ ID NO:530	-11	-20	61.5	-7.5	-1.4	-5.2
1545	AATAAATTTATCATGCCTCA SEQ ID NO:531	-11	-18.4	56.4	-6.9	0	-8.1
1693	TCTTCTTTTACAAACCTCCT SEQ ID NO:532	-11	-22.6	66.2	-11.6	0	-1.9
1694	TTCTTCTTTTACAAACCTCC SEQ ID NO:533	-11	-21.8	64.7	-10.8	0	-1.9
1848	ATTCTTAAATAAGTTCTTCA SEQ ID NO:534	-11	-16.6	54.2	-5.6	0	-4.9
232	CCGCCCTGCAGCGCACACTC SEQ ID NO:535	-10.9	-33.5	84.5	-20.9	-1.7	-10.5
399	CAGTTGCAGGTCTCTCTGCA SEQ ID NO:536	-10.9	-27.3	81.3	-12.9	-3.5	-9.9
552	TTCAACAACCTTCTCTCTCAC SEQ ID NO:537	-10.9	-21.9	67.2	-11	0	-0.6
734	CACCATGCATCACAAATTTGG SEQ ID NO:538	-10.9	-22.8	65.1	-11	-0.7	-6.6
736	TCCACCATGCATCACAAATTT SEQ ID NO:539	-10.9	-24	67.7	-13.1	0	-6.6
791	TGTTCAAGTCATATGGATGTT SEQ ID NO:540	-10.9	-21.5	66.6	-9.9	-0.4	-6.7
797	TACAAGTGTTCAAGTCATATG SEQ ID NO:541	-10.9	-19.5	61.4	-8.6	0	-5.6
798	ATACAAGTGTTCAAGTCATAT SEQ ID NO:542	-10.9	-19.5	61.5	-8.6	0	-3.7
1000	AGTCTTCATTCCATATCCCA SEQ ID NO:543	-10.9	-25.7	74.2	-14.8	0	-2
1123	GACTTTTCCCAAAGCCAAAA SEQ ID NO:544	-10.9	-22.1	61.7	-9.8	-1.3	-4.1
1185	TCAAATTTCCATAAGCTTCA SEQ ID NO:545	-10.9	-19.9	60	-9	0	-6.8
1201	CAAAGCTGTTTGTACTCAA SEQ ID NO:546	-10.9	-19.9	60.6	-8.1	-0.8	-5.5
1646	AAAATTCACCGAAGTCACAG SEQ ID NO:547	-10.9	-19.2	57	-8.3	0	-3.5
70	CAGCAGCAAGACGCTCTTCA SEQ ID NO:548	-10.8	-25.8	72.9	-13.7	-1.2	-6
108	CAGGCGGCCACCAGGTGTGC SEQ ID NO:549	-10.8	-32.5	86.1	-19.9	-1.4	-11.3
380	AATCCATCCCGAAGGTGCCG SEQ ID NO:550	-10.8	-28.5	73.2	-16.4	-1.2	-6.2
581	TCATTACGGGAGACCCGGCA SEQ ID NO:551	-10.8	-28.2	74.4	-13.7	-3.7	-11
746	GTTTTCTGGATCCACCATGC SEQ ID NO:552	-10.8	-26.4	75.4	-14.2	-1.2	-9.7
905	TTGACCTGTCTCCATGTAAG SEQ ID NO:553	-10.8	-23.6	69.1	-12.8	0	-5.1
1131	TTTATTTGACTTTTCCCAA SEQ ID NO:554	-10.8	-20.6	61.7	-9.8	0	-2.7
1148	AGGGGTTTTCTGGTTGTTTT SEQ ID NO:555	-10.8	-24.4	74.5	-13.6	0	-2
1203	TTCAAAGCTGTTTGTACTC SEQ ID NO:556	-10.8	-20.4	63.3	-8.1	-1.4	-6

position	oligo	kcal/ mol	kcal/ mol	deg C	kcal/ mol	kcal/mol	kcal/mol
		total binding	duplex formation	Tm of Duplex	target structure	Intra- molecular oligo	Inter- molecular oligo
1270	CCAGAACCGTCCTTCAGATA SEQ ID NO:557	-10.8	-25.6	70.7	-14.3	-0.2	-3.4
1643	ATTCACCGAAGTCACAGCAC SEQ ID NO:558	-10.8	-24	68.4	-13.2	0	-4.1
1645	AAATTCACCGAAGTCACAGC SEQ ID NO:559	-10.8	-21.7	62.6	-10.9	0	-3.5
1656	CCTTAAATGAAAATTCACC SEQ ID NO:560	-10.8	-17.3	53	-5.6	-0.7	-5.7
1716	CATGTTTCTGCTGAAAATT SEQ ID NO:561	-10.8	-18.8	57.8	-5.5	-2.5	-11.4
1915	CCTTCCACACACATTCACAA SEQ ID NO:562	-10.8	-24.2	67.9	-13.4	0	-0.9
71	TCAGCAGCAAGACGCTCTTC SEQ ID NO:563	-10.7	-25.5	73.5	-13.7	-1	-6
148	GTCACAGTGTGAGGGCAGT SEQ ID NO:564	-10.7	-26.4	79.2	-15.7	0	-6
334	CTCTTCACCAAAAGGATCCT SEQ ID NO:565	-10.7	-23.3	66.3	-11.7	0	-9.7
526	GCCATCTCCAGATGCCATGT SEQ ID NO:566	-10.7	-29.2	80.3	-17.4	-1	-7.8
739	GGATCCACCATGCATCACAA SEQ ID NO:567	-10.7	-25.6	70.7	-14.2	-0.4	-8.3
1205	AGTTCAAAGCTGTTTGTAC SEQ ID NO:568	-10.7	-20.3	63.2	-8.1	-1.4	-6
1513	CCTTATAGAGTCATAGGTTT SEQ ID NO:569	-10.7	-21.6	66.5	-10.9	0	-4.8
1836	GTTCTTCACTTCAAATAAAA SEQ ID NO:570	-10.7	-16.3	52.5	-5.6	0	-1.6
139	TTGAGGGCAGTCCACCGCAT SEQ ID NO:571	-10.6	-29.4	79.4	-17.7	-1	-5.6
353	AGTCTTTGCAGATACCAAAC SEQ ID NO:572	-10.6	-21.2	63.2	-10	-0.3	-5.2
989	CATATCCCAACATTAATGTA SEQ ID NO:573	-10.6	-19.7	58.6	-7.8	-0.2	-10.5
1001	AAGTCTTCATTCATATCCC SEQ ID NO:574	-10.6	-24.3	70.6	-13.7	0	-2.4
1015	CTTCTCCTGCTCTTAAGTCT SEQ ID NO:575	-10.6	-25.2	75.4	-14.6	0	-6
1046	ATTTTATTTCCCACTCCAC SEQ ID NO:576	-10.6	-25.7	72.1	-15.1	0	-0.5
1128	ATTTTGACTTTTCCCAAAGC SEQ ID NO:577	-10.6	-21.8	63.8	-9.8	-1.3	-6.3
1914	CTTCCACACACATTCACAAC SEQ ID NO:578	-10.6	-22.4	64.9	-11.8	0	-1
186	GTCCTCTTGAGCGCGGGCT SEQ ID NO:579	-10.5	-32.7	87.5	-20.7	-1.3	-10
265	CATGCCTGAGACTGTGCGGT SEQ ID NO:580	-10.5	-27.9	76.9	-16.8	-0.3	-5.3
745	TTTTCTGGATCCACCATGCA SEQ ID NO:581	-10.5	-25.9	73.1	-14.2	-1	-9.5
863	TTCTTCAGTGTACTATACA SEQ ID NO:582	-10.5	-20.2	63.8	-9.7	0	-3.5
986	ATCCCAACATTAATGTACAT SEQ ID NO:583	-10.5	-20.2	59.7	-8.4	-0.2	-10.5
1217	GAAATTGCTCTCAGTTCAAA SEQ ID NO:584	-10.5	-19.4	59.4	-8.9	0	-4.2
1337	TCTTAGATTTATCTCTGAGG SEQ ID NO:585	-10.5	-20	63.3	-8.6	-0.7	-6.2
1432	GGGTAGGAAGATGACTTGC SEQ ID NO:586	-10.5	-23.8	69.8	-12.4	-0.7	-4

position	oligo	kcal/ mol	kcal/ mol	deg C	kcal/ mol	kcal/mol	kcal/mol
		total binding	duplex form- ation	Tm of Duplex	target struc- ture	Intra- molecular oligo	Inter- molecular oligo
1717	ACATGTTTTCTGCTGAAAAT SEQ ID NO:587	-10.5	-18.9	58	-6.4	-2	-10.9
1974	TAATAAACATGTCCTTTTAA SEQ ID NO:588	-10.5	-16	51.5	-5.5	0	-6.9
44	CCAGCTGCCTCCGGCTCGGC SEQ ID NO:589	-10.4	-35.4	89.9	-22.9	-2.1	-10.8
66	AGCAAGACGCTCTTCATGTT SEQ ID NO:590	-10.4	-23.9	69.6	-12.3	-1.1	-6.8
107	AGGCGGCCACCAGGTGTGCA SEQ ID NO:591	-10.4	-32.5	86.1	-19.9	-2	-11.8
128	CCACCGCATAATATTGCTC SEQ ID NO:592	-10.4	-24.2	67.3	-12.9	-0.7	-7.9
335	ACTCTTCACCAAAAGGATCC SEQ ID NO:593	-10.4	-22.6	65	-11.7	0	-7.7
1043	TTATTTCCCACTCCCACCCC SEQ ID NO:594	-10.4	-31.5	81.4	-21.1	0	-0.7
1290	GTGTATGTGTTCCTATGCC SEQ ID NO:595	-10.4	-25.5	75.4	-15.1	0	-3
1516	AAACCTTATAGAGTCATAGG SEQ ID NO:596	-10.4	-19	58.7	-8.6	0	-5
1652	AAATTGAAAATTCACCGAAG SEQ ID NO:597	-10.4	-15.3	48.8	-3.6	-1.2	-5.7
1695	ATTCTTCTTTTACAAACCTC SEQ ID NO:598	-10.4	-19.8	60.9	-9.4	0	-1.9
1981	TGAACAATAATAACATGTC SEQ ID NO:599	-10.4	-13.9	47	-3.5	0	-6.9
122	CATAATTATTGCTCCAGGCG SEQ ID NO:600	-10.3	-23.2	65.9	-11.4	-1.4	-9.3
867	TTAGTTCTTCAGTGTTACTA SEQ ID NO:601	-10.3	-20.6	66.1	-10.3	0	-4.1
944	CTCACTGCGGTCTTCAGCTT SEQ ID NO:602	-10.3	-27.4	78.9	-16.4	-0.5	-6.2
1511	TTATAGAGTCATAGGTTTTT SEQ ID NO:603	-10.3	-18.9	61	-8.6	0	-4
1588	TTGACATTTTTTGAAATCCA SEQ ID NO:604	-10.3	-18.4	56.6	-7.2	-0.7	-5
1655	CTTAAATTGAAAATTCACCG SEQ ID NO:605	-10.3	-16.1	50.4	-4.5	-1.2	-5.7
138	TGAGGGCAGTCCACCGCATA SEQ ID NO:606	-10.2	-29	78.5	-17.7	-1	-5.6
368	AGGTGCCGTAGGGACAGTCT SEQ ID NO:607	-10.2	-28.3	80.5	-17	-1	-7.9
590	ACCATTTCTCTATTACGGGA SEQ ID NO:608	-10.2	-25.3	70.6	-14.6	-0.1	-4
628	TTCTCTCAGAAATCACAGCC SEQ ID NO:609	-10.2	-22.8	67.4	-11.9	-0.4	-4
634	AGAGCCTTCTCTCAGAAATC SEQ ID NO:610	-10.2	-22.7	68.1	-10.9	-1.5	-5.1
635	TAGAGCCTTCTCTCAGAAAT SEQ ID NO:611	-10.2	-22	65.9	-10.1	-1.7	-6.4
744	TTTCTGGATCCACCATGCAT SEQ ID NO:612	-10.2	-25.8	72.7	-14.2	-1.2	-9.7
1195	TGTTTGTTACTCAAATTTCC SEQ ID NO:613	-10.2	-19.8	61	-8	-1.6	-4.6
1238	GAACCTACATCAGCAGCCTTT SEQ ID NO:614	-10.2	-24.1	69.6	-13.9	0	-4.5
1253	ATACAGGTAACCCGGGAAC SEQ ID NO:615	-10.2	-24.4	67.1	-12.7	-0.2	-11
1361	CAAACCACAGTGGGTAAAA SEQ ID NO:616	-10.2	-21.5	60.7	-10	-1.2	-9

position	oligo	kcal/ mol	kcal/ mol	deg C	kcal/ mol	kcal/mol	kcal/mol
		total binding	duplex form- ation	Tm of Duplex	target struc- ture	Intra- molecular oligo	Inter- molecular oligo
1492	TATTCTAACCATTTCACA SEQ ID NO:617	-10.2	-18.6	57.3	-8.4	0	-1.2
213	CGGCAGCAGCCACAGTCGTC SEQ ID NO:618	-10.1	-30.4	82.5	-17.1	-3.2	-9.8
363	CCGTAGGGACAGTCTTTGCA SEQ ID NO:619	-10.1	-26.8	75.8	-15.8	-0.8	-7.9
434	ATTTTCCCGTCCCCCTGTCA SEQ ID NO:620	-10.1	-32.3	84.3	-22.2	0	-2.6
576	ACGGGAGACCCGCGCAGCATT SEQ ID NO:621	-10.1	-29.9	77.6	-16.1	-3.7	-12.1
737	ATCCACCATGCATCACAATT SEQ ID NO:622	-10.1	-23.9	67.3	-13.8	0	-6.6
1016	TCTTCTCCTGCTCTTAAGTC SEQ ID NO:623	-10.1	-24.7	75.1	-14.6	0	-6
1134	TGTTTATTATTGACTTTTCC SEQ ID NO:624	-10.1	-19.9	62.2	-9.8	0	-2.5
1154	TCCTTCAGGGGTTTCTGGT SEQ ID NO:625	-10.1	-27.3	80.7	-16.7	-0.2	-5.7
1244	ACCCGGGAACATCATCAGCA SEQ ID NO:626	-10.1	-26.6	71.7	-15.2	0.3	-10.7
1653	TAAATTGAAAATTCACCGAA SEQ ID NO:627	-10.1	-15	48.2	-3.6	-1.2	-5.4
1901	TCACAACCTCTGTTGGCCAAC SEQ ID NO:628	-10.1	-24.2	69.2	-11.1	-1.8	-14
1982	TTGAACAATAATAACATGT SEQ ID NO:629	-10.1	-13.6	46.3	-3.5	0	-6.7
129	TCCACCGCATAATTATTGCT SEQ ID NO:630	-10	-24.2	67.3	-12.9	-1.2	-8.4
157	CTCACTGCTGTACAGTGTT SEQ ID NO:631	-10	-25.5	76.3	-12.1	-3.4	-9.7
396	TTGCAGGTCTCTCTGCAATC SEQ ID NO:632	-10	-25.1	75	-10.7	-4.4	-11.4
643	CACGAAAATAGACCTTCTC SEQ ID NO:633	-10	-21	61.2	-10.1	-0.7	-4.9
1005	TCTTAAGTCTTTCATTCCATA SEQ ID NO:634	-10	-21	64.8	-11	0	-6
1040	TTTCCCACTCCACCCCTC SEQ ID NO:635	-10	-35	88.2	-25	0	0
1546	TAATAAATTTATCATGCCTC SEQ ID NO:636	-10	-17.4	54.6	-6.9	0	-8.1
1999	TATCTTGTTCTTTTATTG SEQ ID NO:637	-10	-18	58.7	-8	0	-0.9
109	CCAGGCGGCCACCAGGTGTG SEQ ID NO:638	-9.9	-32.7	85.1	-21.6	-0.6	-10.2
119	AATTATTGCTCCAGGCGGCC SEQ ID NO:639	-9.9	-27.8	75.3	-16.4	-1.4	-8.9
162	TTGCACTCACTGCTGTCACA SEQ ID NO:640	-9.9	-25.8	75	-14	-1.9	-5.9
755	CTACTTTTGTCTTCTGGAT SEQ ID NO:641	-9.9	-20.7	64.3	-10.8	0	-2.6
1245	AACCCGGGAACATCATCAGC SEQ ID NO:642	-9.9	-25.2	68.6	-13.9	-0.2	-10.7
1254	GATACAGGTAACCCGGGAAC SEQ ID NO:643	-9.9	-24.1	66.5	-12.7	-0.9	-10.7
1412	ACTAACACATTTATTTATAA SEQ ID NO:644	-9.9	-14.7	49.3	-4.8	0	-3.7
1415	TGCACTAACACATTTATTTA SEQ ID NO:645	-9.9	-18.2	56.7	-8.3	0	-4.7
1794	AACATCTAGTACAACAGTCC SEQ ID NO:646	-9.9	-20.8	62.9	-10.9	0	-5.3

position	oligo	kcal/ mol	kcal/ mol	deg C	kcal/ mol	kcal/mol	kcal/mol
		total binding	duplex form- ation	Tm of Duplex	target struc- ture	Intra- molecular oligo	Inter- molecular oligo
1896	ACTCTGTTGGCCAACTTCAA SEQ ID NO:647	-9.9	-24.3	69.8	-11.3	0.2	-14.3
38	GCCTCCGGCTCGGCTCTCCA SEQ ID NO:648	-9.8	-35.3	91.1	-23.4	-2.1	-9.2
161	TGCACTCACTGCTGTACAG SEQ ID NO:649	-9.8	-25.7	74.9	-14	-1.9	-6.2
553	TTTCACAACCTTCTCTCTCA SEQ ID NO:650	-9.8	-21.8	67	-12	0	-0.7
627	TCTCTCAGAAATCACAGCCG SEQ ID NO:651	-9.8	-23.5	67.3	-13.7	0	-3.2
640	GAAATAGAGCCTTCTCTCA SEQ ID NO:652	-9.8	-21.3	63.5	-9.8	-1.7	-5.1
644	TCACGAAAATAGAGCCTTCT SEQ ID NO:653	-9.8	-21	61.2	-11.2	0	-3.5
695	ACTTATGCTATATCTAGAAA SEQ ID NO:654	-9.8	-17.2	55	-7.4	0	-6.2
1047	TATTTTATTTTCCCACTCCCA SEQ ID NO:655	-9.8	-25.2	71	-15.4	0	-0.7
1491	ATTCTAACCATTTCACAA SEQ ID NO:656	-9.8	-18.2	56	-8.4	0	-1.2
1502	CATAGGTTTTTATCTAACC SEQ ID NO:657	-9.8	-19.5	60.4	-8.5	-1.1	-4.6
1840	ATAAGTTCTTCACTTCAAAT SEQ ID NO:658	-9.8	-17.7	56.3	-6.8	-1	-3.6
1916	GCCTTCCACACACATTCACA SEQ ID NO:659	-9.8	-26.7	74.2	-16.9	0	-2
333	TCTTCACAAAAGGATCCTC SEQ ID NO:660	-9.7	-22.8	65.9	-12.1	0	-9.9
400	GCAGTTGCAGGTCTCTCTGC SEQ ID NO:661	-9.7	-28.4	85.2	-16.3	-2.4	-8.2
490	AACAAATCTGTTGGAAGACT SEQ ID NO:662	-9.7	-18.2	56	-6.9	-1.6	-5
641	CGAAAATAGAGCCTTCTCTC SEQ ID NO:663	-9.7	-21.4	62.7	-10	-1.7	-5.4
1255	AGATACAGGTAACCCGGGAA SEQ ID NO:664	-9.7	-23.9	66.2	-12.7	-0.9	-10.7
1424	AAGATGACTTGCACTAACAC SEQ ID NO:665	-9.7	-19.4	58.8	-9.2	-0.1	-5
1654	TTAAATTGAAAATTCACCGA SEQ ID NO:666	-9.7	-15.8	49.9	-4.8	-1.2	-5.7
1701	AAATTGATTCTTCTTTTACA SEQ ID NO:667	-9.7	-17	54.8	-7.3	0	-3.2
164	TTTTGCACTCACTGCTGTCA SEQ ID NO:668	-9.6	-25.1	74	-13.6	-1.9	-5
389	TCTCTCTGCAATCCATCCCG SEQ ID NO:669	-9.6	-28	76.3	-18.4	0	-4.9
466	TACTGAATATTGGAAGAAG SEQ ID NO:670	-9.6	-16.7	53	-7.1	0	-4
1004	CTTAAGTCTTCATTCATAT SEQ ID NO:671	-9.6	-20.6	63.2	-11	0	-4.8
1048	ATATTTTATTTCCCACTCCC SEQ ID NO:672	-9.6	-24.5	69.8	-14.9	0	-1.8
1122	ACTTTTCCCAAAGCCAAAAA SEQ ID NO:673	-9.6	-20.8	58.9	-9.8	-1.3	-4.2
1222	CTTTTGAAATTGCTCTCAGT SEQ ID NO:674	-9.6	-20.8	63.4	-11.2	0	-3.6
1340	ACTTCTTAGATTTATCTCTG SEQ ID NO:675	-9.6	-19.4	61.9	-8.9	-0.7	-5.1
1547	ATAATAAATTTATCATGCCT SEQ ID NO:676	-9.6	-17	53.4	-6.9	0	-8.1

position	oligo	kcal/ mol	kcal/ mol	deg C	kcal/ mol	kcal/mol	kcal/mol
		total binding	duplex formation	Tm of Duplex	target structure	Intra- molecular oligo	Inter- molecular oligo
1998	ATCTTGTTCTTTTATTGA SEQ ID NO:677	-9.6	-18.9	60.7	-9.3	0	-2.3
137	GAGGGCAGTCCACCGCATAA SEQ ID NO:678	-9.5	-28.3	76.3	-17.7	-1	-5.6
149	TGTCACAGTGTGAGGGCAG SEQ ID NO:679	-9.5	-25.2	75.2	-15.7	0	-6
310	ATTAGAAGGCTGACACCTCA SEQ ID NO:680	-9.5	-23.3	67.7	-13	-0.6	-4.3
316	CTCCCCATTAGAAGGCTGAC SEQ ID NO:681	-9.5	-26.4	73.1	-16.9	0	-3.7
474	GACTTGGTTACTGAATATTG SEQ ID NO:682	-9.5	-18.8	58.5	-9.3	0	-4.6
729	TGCATCACAATTGGATCTT SEQ ID NO:683	-9.5	-21.2	63.5	-11.7	0	-5.4
740	TGGATCCACCATGCATCACA SEQ ID NO:684	-9.5	-26.3	72.8	-15.5	-1.1	-9.6
1236	ACTACATCAGCAGCCTTTTG SEQ ID NO:685	-9.5	-24.3	70.9	-14.8	0	-4.5
1494	TTTATTCTAACCATTTCAT SEQ ID NO:686	-9.5	-17.9	56.2	-8.4	0	-1.4
1520	TTGAAAACCTTATAGAGTCA SEQ ID NO:687	-9.5	-18.1	56.2	-8.6	0	-4.8
1585	ACATTTTTTGAAATCCAGAG SEQ ID NO:688	-9.5	-18.3	56.6	-7.8	-0.9	-4.3
1788	TAGTACAACAGTCCTGTTTG SEQ ID NO:689	-9.5	-21.6	65.6	-11.1	-0.9	-8.4
151	GCTGTCACAGTGTGAGGGC SEQ ID NO:690	-9.4	-27.2	80.6	-17.1	-0.4	-7.4
636	ATAGAGCCTTCTCTCAGAAA SEQ ID NO:691	-9.4	-22	65.9	-10.9	-1.7	-6.4
674	TTCTCTAAAATGTTGGCTGTG SEQ ID NO:692	-9.4	-21.4	63.2	-12	0	-3.9
730	ATGCATCACAATTGGATCT SEQ ID NO:693	-9.4	-21.1	63.1	-11.7	0	-6.4
1130	TTATTTTGACTTTTCCCAA SEQ ID NO:694	-9.4	-19.8	59.5	-9.8	-0.3	-3.7
1153	CCTTCAGGGGTTTCTGGTT SEQ ID NO:695	-9.4	-27	79.2	-16.7	-0.7	-4.2
1191	TGTTACTCAAATTTCCATAA SEQ ID NO:696	-9.4	-18.1	56.2	-8.7	0	-4.5
1519	TGAAAACCTTATAGAGTCAT SEQ ID NO:697	-9.4	-18	55.9	-8.6	0	-4.8
1603	TCTGTGCTCATTTTGTGAC SEQ ID NO:698	-9.4	-21.7	66.9	-11.8	-0.1	-3.3
1775	CTGTTTGTGCTAAGATTCTT SEQ ID NO:699	-9.4	-21.3	65.5	-11.9	0	-5.4
1895	CTCTGTTGGCCAACTTCAAG SEQ ID NO:700	-9.4	-24.1	69.5	-11.3	-0.5	-15
41	GCTGCCTCCGGCTCGGCTCT SEQ ID NO:701	-9.3	-34.9	91.1	-23.5	-2.1	-10
121	ATAATTATTGCTCCAGGCGG SEQ ID NO:702	-9.3	-23.7	67.2	-12.9	-1.4	-9.3
163	TTTGCACTCACTGCTGTCAC SEQ ID NO:703	-9.3	-25.2	74.3	-14	-1.9	-5
572	GAGACCCGGCAGCATTTCTCT SEQ ID NO:704	-9.3	-29.1	79.5	-19.1	-0.5	-5.8
580	CATTACGGGAGACCCGGCAG SEQ ID NO:705	-9.3	-27.8	73.2	-15.7	-2.8	-10.1
956	GAACATAATTGACTCACTGC SEQ ID NO:706	-9.3	-19.9	60.4	-10.6	0	-2.7

position	oligo	kcal/ mol	kcal/ mol	deg C	kcal/ mol	kcal/mol	kcal/mol
		total binding	duplex form- ation	Tm of Duplex	target struc- ture	Intra- molecular oligo	Inter- molecular oligo
999	GTCTTCATTCCATATCCCAA SEQ ID NO:707	-9.3	-25	71.5	-15.7	0	-2
1045	TTTTATTTCCTCCACTCCCACC SEQ ID NO:708	-9.3	-27.7	75.6	-18.4	0	-0.7
1638	CCGAAGTCACAGCACTTATG SEQ ID NO:709	-9.3	-23.3	66.5	-13.3	-0.5	-4.6
117	TTATTGCTCCAGGCGGCCAC SEQ ID NO:710	-9.2	-29.4	79.4	-19	-0.7	-10.2
215	CTCGGCAGCAGCCACAGTCG SEQ ID NO:711	-9.2	-30.1	80.9	-17.7	-3.2	-9.8
303	GGCTGACACCTCAGCCCCGG SEQ ID NO:712	-9.2	-33.4	85.2	-18.8	-5.3	-18.2
630	CCTTCTCTCAGAAATCACAG SEQ ID NO:713	-9.2	-21.9	65.2	-11.9	-0.6	-4.3
731	CATGCATCACAATTTGGATC SEQ ID NO:714	-9.2	-20.9	62.4	-11.7	0	-6.6
754	TACTTTTGTCTTTCTGGATC SEQ ID NO:715	-9.2	-20.2	63.8	-11	0	-4.1
756	CCTACTTTTGTCTTCTGGA SEQ ID NO:716	-9.2	-22.7	68.2	-13.5	0	-2.7
1066	CTACCAAGGAAGGCTAAAT SEQ ID NO:717	-9.2	-21.3	61.3	-12.1	0	-3.8
1149	CAGGGGTCTTCTGTTGTTT SEQ ID NO:718	-9.2	-25	75.3	-15.3	-0.1	-3.6
1365	CACACAAACCACCACTGGGT SEQ ID NO:719	-9.2	-25.7	70.3	-15.2	-1.2	-9
1909	ACACACATTCACAACCTGT SEQ ID NO:720	-9.2	-21.7	64.6	-12.5	0	-2.5
39	TGCCTCCGGCTCGGCTCTCC SEQ ID NO:721	-9.1	-34.6	90	-23.4	-2.1	-10
582	CTCATTACGGGAGACCCGGC SEQ ID NO:722	-9.1	-28.4	75.2	-15.6	-3.7	-11
584	TCCTCATACGGGAGACCCG SEQ ID NO:723	-9.1	-27.8	73.7	-15.4	-3.3	-10.5
673	TCCTAAAATGTTGGCTGTGT SEQ ID NO:724	-9.1	-22.5	65.9	-13.4	0	-3.9
987	TATCCCAACATTAATGTACA SEQ ID NO:725	-9.1	-19.9	59.1	-9.5	-0.2	-10.5
1184	CAAATTTCATTAAGCTTCAA SEQ ID NO:726	-9.1	-18.8	56.8	-9.7	0	-6.8
1212	TGCTCTCAGTTCAAAGCTGT SEQ ID NO:727	-9.1	-24	71.8	-13.5	-1.3	-6.2
1490	TTCTAACCATTCTCAACAAA SEQ ID NO:728	-9.1	-17.5	54.2	-8.4	0	-1.9
1518	GAAAACCTTATAGAGTCATA SEQ ID NO:729	-9.1	-17.7	55.4	-8.6	0	-4.8
1584	CATTTTTTGAAATCCAGAGT SEQ ID NO:730	-9.1	-19.3	59	-9.2	-0.9	-4.3
1842	AAATAAGTTCTTCACTTCAA SEQ ID NO:731	-9.1	-17	54.4	-6.8	-1	-4.2
1894	TCTGTTGGCCAACTTCAAGA SEQ ID NO:732	-9.1	-23.8	68.9	-11.3	-0.5	-15
43	CAGCTGCCCTCCGGCTCGGCT SEQ ID NO:733	-9	-34.3	88.6	-22.9	-2.4	-9.9
135	GGGCAGTCCACCGCATAATT SEQ ID NO:734	-9	-27.8	75	-17.7	-1	-4.9
140	GTTGAGGGCAGTCCACCGCA SEQ ID NO:735	-9	-30.6	83	-20.5	-1	-4.8
150	CTGTCACAGTGTGAGGGCA SEQ ID NO:736	-9	-26.1	76.9	-17.1	0	-6

position	oligo	kcal/ mol	kcal/ mol	deg C	kcal/ mol	kcal/mol	kcal/mol
		total binding	duplex formation	Tm of Duplex	target structure	Intra- molecular oligo	Inter- molecular oligo
629	CTTCTCTCAGAAATCACAGC SEQ ID NO:737	-9	-21.7	65.6	-11.9	-0.6	-3.9
747	TGTTTTCTGGATCCACCATG SEQ ID NO:738	-9	-24.6	70.9	-14.2	-1.2	-9.7
757	TCCTACTTTTTGTTTTCTGG SEQ ID NO:739	-9	-22.5	68.5	-13.5	0	-2.9
949	TTTGACTCACTGCGGTCTTC SEQ ID NO:740	-9	-24.9	73.1	-14.9	-0.9	-6.2
1225	AGCCTTTTGAAATTGCTCTC SEQ ID NO:741	-9	-22.7	67	-13.7	0	-5.4
1252	TACAGGTAACCCGGGAACATA SEQ ID NO:742	-9	-24.1	66.6	-13.7	-1.1	-10.2
1366	ACACACAAACCACCAAGTGGG SEQ ID NO:743	-9	-24.7	67.8	-14.4	-1.2	-9
1489	TCTAACCATTTTCAACAAAT SEQ ID NO:744	-9	-17.4	53.9	-6.4	0	-2.5
1507	AGAGTCATAGGTTTTTATTC SEQ ID NO:745	-9	-19.6	63.2	-10.6	0	-4.8
1623	TTATGTTTTAAATAAGGTCCC SEQ ID NO:746	-9	-19.3	58.8	-10.3	0	-4.3
136	AGGGCAGTCCACCGCATAAT SEQ ID NO:747	-8.9	-27.7	75	-17.7	-1	-5.6
347	TGCAGATACCAAATCTTCA SEQ ID NO:748	-8.9	-21.9	64.1	-13	0	-4.7
983	CCAACATTAATGTACATCAA SEQ ID NO:749	-8.9	-18.2	55.4	-8	-0.2	-10.5
1017	ATCTTCTCCTGCTCTTAAGT SEQ ID NO:750	-8.9	-24.3	73.2	-15.4	0	-6
1213	TTGCTCTCAGTTCAAAGCTG SEQ ID NO:751	-8.9	-22.9	68.7	-12.8	-1.1	-5.6
1525	GATGTTTGAAAACCTTATAG SEQ ID NO:752	-8.9	-17.1	53.9	-7.7	-0.1	-5.7
1702	AAAATTGATTCTTCTTTTAC SEQ ID NO:753	-8.9	-15.6	51.6	-6.7	0	-3.2
1973	AATAAACATGTCCTTTTAAA SEQ ID NO:754	-8.9	-15.6	50.4	-6.7	0	-6.4
1983	ATTGAACAATAATAAACATG SEQ ID NO:755	-8.9	-12.4	43.9	-3.5	0	-5.3
106	GGCGGCCACCAAGGTGTGCAG SEQ ID NO:756	-8.8	-32.5	86.1	-21.1	-2.5	-12.5
270	CCATCCATGCCTGAGACTGT SEQ ID NO:757	-8.8	-28	76.9	-19.2	0	-3.8
544	TTCTTCTCTCACAATATTGC SEQ ID NO:758	-8.8	-21	64.8	-11.6	0	-8.5
749	TTTGTTTTCTGGATCCACCA SEQ ID NO:759	-8.8	-24.8	71.8	-14.7	-1.1	-9.7
1013	TCTCTGCTCTTAAGTCTTC SEQ ID NO:760	-8.8	-24.7	75.1	-15.9	0	-6
1018	CATCTTCTCCTGCTCTTAAG SEQ ID NO:761	-8.8	-23.8	70.9	-15	0	-5.4
1143	TTTTCTGGTTGTTTTATTTT SEQ ID NO:762	-8.8	-19.6	62.6	-10.8	0	-1.5
1211	GCTCTCAGTTCAAAGCTGTT SEQ ID NO:763	-8.8	-24.1	72.4	-14.4	-0.7	-5.4
1226	CAGCCTTTTGAAATTGCTCT SEQ ID NO:764	-8.8	-23	66.7	-13.7	-0.1	-5.5
1243	CCCGGGAACATACATCAGCAG SEQ ID NO:765	-8.8	-26.4	71.5	-16.8	-0.2	-9.2
1283	TGTTTCCTATGCCCCAGAAC SEQ ID NO:766	-8.8	-27	74.1	-18.2	0	-3

position	oligo	kcal/ mol	kcal/ mol	deg C	kcal/ mol	kcal/mol	kcal/mol
		total binding	duplex formation	Tm of Duplex	target structure	Intra- molecular oligo	Inter- molecular oligo
1755	TCAAATATACTCCTAATTCC SEQ ID NO:767	-8.8	-19	57.8	-10.2	0	-2.9
72	GTCAGCAGCAAGACGCTCTT SEQ ID NO:768	-8.7	-26.3	75.2	-16.3	-1.2	-7.9
666	ATGTTGGCTGTGTGTTGAAC SEQ ID NO:769	-8.7	-23	69.1	-14.3	0	-4
696	TACTTATGCTATATCTAGAA SEQ ID NO:770	-8.7	-17.6	56.3	-8.9	0	-6.2
886	GATTACCTAAATTGCATTTT SEQ ID NO:771	-8.7	-18.7	57.2	-10	0	-6
1129	TATTTTGACTTTTCCCAAAG SEQ ID NO:772	-8.7	-19.7	59.3	-9.8	-1.1	-5
1258	TTCAGATACAGTAACCCGG SEQ ID NO:773	-8.7	-24	67.5	-14.3	-0.9	-5.8
1777	TCCTGTTTGTGCTAAGATTC SEQ ID NO:774	-8.7	-22.7	68.6	-14	0	-3.6
1965	TGTCCTTTTAAACAAAACC SEQ ID NO:775	-8.7	-17.4	53.3	-8.2	-0.1	-6
158	ACTCACTGCTGTACAGTGT SEQ ID NO:776	-8.6	-25.6	76.5	-13.6	-3.4	-9.7
750	TTTGTGTTTCTGGATCCACC SEQ ID NO:777	-8.6	-24.2	71	-14.7	0	-9.7
878	AAATTGCATTTTATGTTCTT SEQ ID NO:778	-8.6	-18	57.2	-9.4	0	-5.8
887	AGATTACCTAAATTGCATTT SEQ ID NO:779	-8.6	-18.6	57.1	-10	0	-5.3
900	CTGTCTCCATGTAAGATTAC SEQ ID NO:780	-8.6	-21.3	64.8	-12.7	0	-5.5
950	ATTGACTCACTGCGGTCTT SEQ ID NO:781	-8.6	-24.5	71.4	-14.9	-0.9	-6.2
1144	GTCTTCTGGTGTGTTTATTT SEQ ID NO:782	-8.6	-20.7	65.7	-12.1	0	-1.5
1289	TGTATGTGTTTCTATGCCC SEQ ID NO:783	-8.6	-26.3	75.5	-17.7	0	-3
1414	GCACTAACACATTTATTTAT SEQ ID NO:784	-8.6	-18.2	56.8	-9.6	0	-3.4
1774	TGTTTGTGCTAAGATTCCTT SEQ ID NO:785	-8.6	-20.5	63.8	-11.9	0	-5.6
1984	TATTGAACAATAATAACAT SEQ ID NO:786	-8.6	-12.1	43.4	-3.5	0	-6.5
268	ATCCATGCCTGAGACTGTGC SEQ ID NO:787	-8.5	-27.1	76.4	-18.6	0	-4.2
492	GAAACAAATCTGTTGGAAGA SEQ ID NO:788	-8.5	-17	53.2	-6.9	-1.5	-5
494	GAGAAACAAATCTGTTGGAA SEQ ID NO:789	-8.5	-17	53.2	-6.9	-1.5	-5
571	AGACCCGGCAGCATTCCTT SEQ ID NO:790	-8.5	-28.6	78.6	-20.1	0	-6.3
595	ATTTAACCATTTCCTCATTA SEQ ID NO:791	-8.5	-20.5	61.5	-12	0	-2.4
882	ACCTAAATTGCATTTTATAGT SEQ ID NO:792	-8.5	-19.3	59	-9.6	-0.9	-9.6
1155	TTCTTTCAGGGGTTTCTGG SEQ ID NO:793	-8.5	-26.2	77.3	-16.8	-0.7	-5.7
1196	CTGTTTGTACTCAAATTC SEQ ID NO:794	-8.5	-18.7	59.1	-8.6	-1.6	-4.6
1339	CTTCTTAGATTTATCTCTGA SEQ ID NO:795	-8.5	-19.8	62.8	-10.4	-0.7	-5.1
1517	AAAACCTTATAGAGTCATAG SEQ ID NO:796	-8.5	-17.1	54.3	-8.6	0	-4.8

position	oligo	kcal/ mol	kcal/ mol	deg C	kcal/ mol	kcal/mol	kcal/mol
		total binding	duplex form- ation	Tm of Duplex	target struc- ture	Intra- molecular oligo	Inter- molecular oligo
1615	AAATAAGGTCCCTCTGTTGC SEQ ID NO:797	-8.5	-23.7	68.4	-15.2	0	-4.2
1843	TAAATAAGTTCTTCACTTCA SEQ ID NO:798	-8.5	-17.4	55.8	-8	-0.7	-4.2
269	CATCCATGCCTGAGACTGTG SEQ ID NO:799	-8.4	-26	73.2	-17.6	0	-4.2
361	GTAGGGACAGTCTTTGCAGA SEQ ID NO:800	-8.4	-24.6	74	-16.2	0	-5.9
402	TGGCAGTTGCAGGTCTCTCT SEQ ID NO:801	-8.4	-27.8	83.1	-18.5	-0.7	-6.6
667	AATGTTGGCTGTGTGTTGAA SEQ ID NO:802	-8.4	-22.1	66.1	-13.7	0	-3.7
733	ACCATGCATCACAATTTGGA SEQ ID NO:803	-8.4	-22.7	65.2	-13.1	-1.1	-6.6
786	AGTCATATGGATGTTATGGA SEQ ID NO:804	-8.4	-20.6	63.5	-11.5	-0.4	-6.2
1064	ACCAAGGAAGGGCTAAATAT SEQ ID NO:805	-8.4	-20.4	59.5	-12	0	-3.8
1209	TCTCAGTTCAAAGCTGTTTG SEQ ID NO:806	-8.4	-21.5	66	-11.7	-1.3	-6.8
227	CTGCAGCGCACACTCGGCAG SEQ ID NO:807	-8.3	-29.4	78.6	-19.6	-1.4	-8.1
264	ATGCCCTGAGACTGTGCGGTA SEQ ID NO:808	-8.3	-26.9	75.3	-18	-0.3	-5.4
348	TTGCAGATACCAAACCTCTTC SEQ ID NO:809	-8.3	-21.3	63.3	-13	0	-5.2
575	CGGGAGACCGGCAGCATTC SEQ ID NO:810	-8.3	-30.1	78.7	-19	-2.8	-11
884	TTACCTAAATGTCATTTTAA SEQ ID NO:811	-8.3	-17.9	55.7	-9.6	0	-6.2
951	AATTTGACTCACTGCGTCT SEQ ID NO:812	-8.3	-23.7	68.7	-14.9	-0.2	-6.2
998	TCTTCATTCCATATCCCAAC SEQ ID NO:813	-8.3	-24	68.8	-15.7	0	-2
1063	CCAAGGAAGGGCTAAATATT SEQ ID NO:814	-8.3	-20.3	59.4	-12	0	-4.4
1206	CAGTTCAAAGCTGTTTGTTA SEQ ID NO:815	-8.3	-20.8	63.9	-11.6	-0.8	-6.2
1505	AGTCATAGTTTATTTCTA SEQ ID NO:816	-8.3	-19.6	63	-11.3	0	-2.4
1700	AATTGATTCTTCTTTTACAA SEQ ID NO:817	-8.3	-17	54.8	-8.7	0	-3.3
1839	TAAGTTCTTCACTTCAAATA SEQ ID NO:818	-8.3	-17.4	55.8	-8	-1	-3.6
272	TGCCATCCATGCCTGAGACT SEQ ID NO:819	-8.2	-28.6	77.7	-20.4	0	-4.2
295	CCTCAGCCCCGGGCCACACT SEQ ID NO:820	-8.2	-35.5	88.1	-25.9	-1	-10.4
433	TTTTCCCGTCCCCCTGTCAC SEQ ID NO:821	-8.2	-32.5	85	-24.3	0	-2.6
732	CCATGCATCACAATTTGGAT SEQ ID NO:822	-8.2	-22.5	64.6	-13.8	-0.2	-6.6
741	CTGGATCCACCATGCATCAC SEQ ID NO:823	-8.2	-26.5	73.6	-16.9	-1.2	-9.7
945	ACTCACTGCGGTCTTCAGCT SEQ ID NO:824	-8.2	-27.5	79.1	-18.6	-0.5	-6.2
1126	TTTGACTTTTCCCAAAGCCA SEQ ID NO:825	-8.2	-24.4	68.1	-15.5	-0.4	-6
1135	TTGTTTATTTTGACTTTTC SEQ ID NO:826	-8.2	-18	58.5	-9.8	0	-2.5

position	oligo	kcal/ mol	kcal/ mol	deg C	kcal/ mol	kcal/mol	kcal/mol
		total binding	duplex form- ation	Tm of Duplex	target struc- ture	Intra- molecular oligo	Inter- molecular oligo
1972	ATAAACATGTCCTTTTAAAA SEQ ID NO:827	-8.2	-15.6	50.4	-7.4	0	-6.9
51	ATGTTTCCCAGCTGCCTCCG SEQ ID NO:828	-8.1	-31.1	82.6	-22.5	0	-8.1
271	GCCATCCATGCCTGAGACTG SEQ ID NO:829	-8.1	-28.6	77.7	-20.5	0	-4.2
491	AAACAAATCTGTTGGAAGAC SEQ ID NO:830	-8.1	-16.6	52.5	-6.9	-1.5	-5
574	GGGAGACCCGGCAGCATTCT SEQ ID NO:831	-8.1	-30.2	80.9	-20.7	-1.3	-8.1
895	TCCATGTAAGATTACCTAAA SEQ ID NO:832	-8.1	-19.1	57.6	-11	0	-4.3
1065	TACCAAGGAAGGGCTAAATA SEQ ID NO:833	-8.1	-20.1	59	-12	0	-3.8
1411	CTAACACATTTATTTATAAA SEQ ID NO:834	-8.1	-13.8	47.2	-4.8	-0.7	-6.1
1665	ATTTTCATACCTTAAATTGA SEQ ID NO:835	-8.1	-17.3	54.6	-9.2	0	-3.2
1900	CACAACTCTGTTGGCCAACT SEQ ID NO:836	-8.1	-24.7	69.6	-13.2	-1.8	-15
1989	TTTTTTATTGAACAATAATA SEQ ID NO:837	-8.1	-13.1	45.9	-4.1	-0.6	-9
1990	CTTTTTTATTGAACAATAAT SEQ ID NO:838	-8.1	-14.3	48.3	-5.5	-0.3	-8.7
1992	TTCTTTTATTGAACAATA SEQ ID NO:839	-8.1	-15.5	51.4	-7.4	0	-6.7
52	CATGTTTCCCAGCTGCCTCC SEQ ID NO:840	-8	-31	84.2	-22.5	0	-8.1
315	TCCCCATTAGAAGGCTGACA SEQ ID NO:841	-8	-26.2	72.3	-18.2	0	-3.7
362	CGTAGGGACAGTCTTTGCAG SEQ ID NO:842	-8	-24.8	72.4	-16.3	-0.1	-6
546	ACTTCTTCTCTCACAAATATT SEQ ID NO:843	-8	-20.3	63.1	-12.3	0	-3.8
591	AACCAATTCCTCATTACGGG SEQ ID NO:844	-8	-24	67.2	-16	0	-3.6
596	GATTTAACCATTTCCTCATT SEQ ID NO:845	-8	-21.4	63.4	-13.4	0	-2.4
1548	GATAATAAATTTATCATGCC SEQ ID NO:846	-8	-16.7	52.8	-6.9	-1.8	-8.1
1718	GACATGTTTTCTGCTGAAAA SEQ ID NO:847	-8	-19.5	59.2	-9.2	-2.3	-11.2
1985	TTATTGAACAATAATAACA SEQ ID NO:848	-8	-12.2	43.7	-3.5	-0.3	-8.5
14	TGGTCTTGCTGGTGGAAG SEQ ID NO:849	-7.9	-25.3	74	-17.4	0	-3.6
58	GCTCTTCATGTTTCCCAGCT SEQ ID NO:850	-7.9	-28.4	81.7	-20.5	0	-4.7
61	GACGCTCTTCATGTTTCCCA SEQ ID NO:851	-7.9	-27.3	76.4	-19.4	0	-4.7
165	CTTTTGCACTCACTGCTGTC SEQ ID NO:852	-7.9	-25.3	74.9	-16.1	-1.2	-5
216	ACTCGGCAGCAGCCACAGTC SEQ ID NO:853	-7.9	-29.5	82	-18.4	-3.2	-9.8
351	TCTTTGCAGATACCAAATC SEQ ID NO:854	-7.9	-21.3	63.3	-12.8	-0.3	-5.2
493	AGAAACAAATCTGTTGGAAG SEQ ID NO:855	-7.9	-16.4	52.1	-6.9	-1.5	-5
495	AGAGAAACAAATCTGTTGGA SEQ ID NO:856	-7.9	-17.7	55.1	-8.7	-1	-4.4

position	oligo	kcal/ mol	kcal/ mol	deg C	kcal/ mol	kcal/mol	kcal/mol
		total binding	duplex form- ation	Tm of Duplex	target struc- ture	Intra- molecular oligo	Inter- molecular oligo
548	CAACTTCTTCTCTCACAATA SEQ ID NO:857	-7.9	-20.2	61.9	-12.3	0	-1.2
554	CTTTCACAACCTTCTCTCTC SEQ ID NO:858	-7.9	-22	67.8	-14.1	0	-0.7
1493	TTATCTTAACCATTTTCAAC SEQ ID NO:859	-7.9	-18	56.4	-10.1	0	-1.2
1514	ACCTTATAGAGTCATAGGTT SEQ ID NO:860	-7.9	-21.7	66.7	-13.1	-0.5	-5.7
1988	TTTTTATTGAACAATAATA SEQ ID NO:861	-7.9	-12.3	44.2	-3.5	-0.6	-9
62	AGACGCTCTTCATGTTTCCC SEQ ID NO:862	-7.8	-26.6	75.7	-18.8	0	-6
668	AAATGTTGGCTGTGTGTGA SEQ ID NO:863	-7.8	-22.1	66.1	-14.3	0	-3.7
748	TTGTTTCTGGATCCACCAT SEQ ID NO:864	-7.8	-24.7	71.4	-15.5	-1.2	-9.7
885	ATTACCTAAATTGCATTTTT SEQ ID NO:865	-7.8	-18.2	56.3	-10.4	0	-6.2
888	AAGATTACCTAAATGCAATT SEQ ID NO:866	-7.8	-17.8	54.9	-10	0	-5.3
1044	TTTATTTCCCACTCCACCC SEQ ID NO:867	-7.8	-29.6	78.6	-21.8	0	-0.7
1246	TAACCCGGGAACATACATCAG SEQ ID NO:868	-7.8	-23.1	64.3	-13.9	-0.2	-10.7
1369	TACACACACAAACCACCACT SEQ ID NO:869	-7.8	-22.9	64.3	-15.1	0	-2.6
1504	GTCATAGGTTTTTTATCTAA SEQ ID NO:870	-7.8	-18.9	60.5	-11.1	0	-2.6
1817	ATACTTCTGAGATATTTCTT SEQ ID NO:871	-7.8	-20.6	63.4	-12.8	0	-3.8
134	GGCAGTCCACCGCATAATTA SEQ ID NO:872	-7.7	-26.3	72.1	-17.7	-0.7	-5
465	ACTGAATATTGGAAGAAGGG SEQ ID NO:873	-7.7	-18.2	56	-10.5	0	-4.6
663	TTGGCTGTGTGTGAACAAT SEQ ID NO:874	-7.7	-21.8	64.8	-13.2	-0.7	-7.8
879	TAAATTGCATTTTTAGTTCT SEQ ID NO:875	-7.7	-17.6	56.3	-9.9	0	-6.2
894	CCATGTAAGATTACCTAAAT SEQ ID NO:876	-7.7	-18.7	56.4	-11	0	-4.9
1125	TTGACTTTTCCCAAAGCCAA SEQ ID NO:877	-7.7	-23.6	65.8	-14.5	-1.3	-6.1
1227	GCAGCCTTTTGAAATTGCTC SEQ ID NO:878	-7.7	-23.9	68.9	-15.5	-0.4	-5.5
1229	CAGCAGCCTTTTGAAATTGC SEQ ID NO:879	-7.7	-23.3	66.9	-14.9	-0.4	-4.9
1630	ACAGCACTTATGTTTAAATA SEQ ID NO:880	-7.7	-17.7	55.8	-10	0	-5.4
1838	AAGTTCTTCACTTCAAATAA SEQ ID NO:881	-7.7	-17	54.4	-8.4	-0.7	-3.3
1943	ACAGCTTATGCAGCTTTACA SEQ ID NO:882	-7.7	-23.4	69.3	-13.7	-2	-6.9
120	TAATTATGCTCCAGGCGGC SEQ ID NO:883	-7.6	-25.5	71.3	-16.4	-1.4	-7.2
152	TGCTGTACAGTGTGAGGG SEQ ID NO:884	-7.6	-25.4	75.6	-17.1	-0.4	-5.7
214	TCGGCAGCAGCCACAGTCGT SEQ ID NO:885	-7.6	-30.4	82.5	-19.6	-3.2	-9.8
344	AGATACCAAACCTTTCACCA SEQ ID NO:886	-7.6	-22.3	64.4	-14.7	0	-2.6

position	oligo	kcal/ mol	kcal/ mol	deg C	kcal/ mol	kcal/mol	kcal/mol
		total binding	duplex formation	Tm of Duplex	target structure	Intra- molecular oligo	Inter- molecular oligo
345	CAGATACCAAACCTCTTCACC SEQ ID NO:887	-7.6	-22.3	64.4	-14.7	0	-2.6
645	ATCACGAAAATAGAGCCTTC SEQ ID NO:888	-7.6	-20.1	59.4	-12.5	0	-3.5
828	TCTACATGCATTTCGAATATT SEQ ID NO:889	-7.6	-19.4	58.8	-11.2	0	-8.4
1754	CAAATATACTCCTAATTCCA SEQ ID NO:890	-7.6	-19.3	57.7	-11.7	0	-2.9
1849	AATTCTTAAATAAGTTCTTC SEQ ID NO:891	-7.6	-15.2	51.1	-7.6	0	-4.9
299	GACACCTCAGCCCCGGGCCA SEQ ID NO:892	-7.5	-35.2	87.6	-25.8	-1.8	-11.2
549	ACAACTTCTTCTCTCACAAT SEQ ID NO:893	-7.5	-20.7	63	-13.2	0	-0.9
665	TGTTGGCTGTGTGTTGAACA SEQ ID NO:894	-7.5	-23.7	70.3	-15.5	-0.5	-5.8
703	TTACATGTACTTATGCTATA SEQ ID NO:895	-7.5	-18.6	58.7	-10.6	0	-7.7
829	ATCTACATGCATTTCGAATAT SEQ ID NO:896	-7.5	-19.3	58.5	-11.2	0	-8.4
1284	GTGTTTCCTATGCCCCAGAA SEQ ID NO:897	-7.5	-28	76.8	-20.5	0	-3
1524	ATGTTTGAAAACCTTATAGA SEQ ID NO:898	-7.5	-17.1	53.9	-9.1	-0.1	-5.7
1835	TTCTTCACTTCAAATAAAAT SEQ ID NO:899	-7.5	-15.1	49.8	-7.6	0	-1.2
1942	CAGCTTATGCAGCTTTACAT SEQ ID NO:900	-7.5	-23.2	68.6	-13.7	-2	-6.9
40	CTGCCTCCGGCTCGGCTCTC SEQ ID NO:901	-7.4	-33.5	88.7	-24	-2.1	-10
130	GTCCACCGCATAATTATTGC SEQ ID NO:902	-7.4	-24.5	68.5	-16.4	-0.4	-7.5
251	TGCGGTAGCAAGTTTCTCCC SEQ ID NO:903	-7.4	-27.6	77.3	-18.6	-1.6	-5.1
350	CTTTGCAGATACCAAACCTCT SEQ ID NO:904	-7.4	-21.8	63.7	-13.8	-0.3	-5.2
388	CTCTCTGCAATCCATCCCGA SEQ ID NO:905	-7.4	-28.2	75.9	-20.8	0	-4.7
432	TTTCCCGTCCCCCTGTCA SEQ ID NO:906	-7.4	-33.1	85.5	-25.7	0	-2.5
642	ACGAAAATAGAGCCTTCTCT SEQ ID NO:907	-7.4	-21.2	61.9	-12.2	-1.5	-6.5
728	GCATCACAATTTGGATCTTC SEQ ID NO:908	-7.4	-21.6	65.1	-14.2	0	-5.4
752	CTTTTGTGTTTTCTGGATCCA SEQ ID NO:909	-7.4	-23	69	-14.7	0	-9.6
881	CCTAAATTGCATTTTATAGTT SEQ ID NO:910	-7.4	-19.2	58.8	-10.6	-0.9	-9.6
889	TAAGATTACCTAAATTGCAT SEQ ID NO:911	-7.4	-17.4	54.1	-10	0	-5.3
899	TGTCTCCATGTAAGATTACC SEQ ID NO:912	-7.4	-22.4	66.6	-15	0	-5.5
1002	TAAGTCTTCATTCCATATCC SEQ ID NO:913	-7.4	-22	66.3	-14.6	0	-2.7
1121	CTTTTCCCAAAGCCAAAAA SEQ ID NO:914	-7.4	-19.9	56.8	-11.8	-0.4	-3.4
1235	CTACATCAGCAGCCTTTTGA SEQ ID NO:915	-7.4	-24.7	71.6	-17.3	0	-4.5
1364	ACACAAACCACCAAGTGGGTA SEQ ID NO:916	-7.4	-24.7	68.7	-16	-1.2	-9

position	oligo	kcal/ mol	kcal/ mol	deg C	kcal/ mol	kcal/mol	kcal/mol
		total binding	duplex formation	Tm of Duplex	target structure	Intra- molecular oligo	Inter- molecular oligo
1367	CACACACAAACCACAGTGG SEQ ID NO:917	-7.4	-24.2	66.6	-15.8	-0.9	-8.5
1614	AATAAGGTCCCTCTGTGCT SEQ ID NO:918	-7.4	-25.3	72.6	-17.9	0	-4.7
1622	TATGTTTAAATAAGGTCCCT SEQ ID NO:919	-7.4	-20.1	60.3	-12.7	0	-5.1
1636	GAAGTCACAGCACTTATGTT SEQ ID NO:920	-7.4	-21.8	66.1	-13.7	-0.5	-4.6
1723	AAGTTGACATGTTTTCTGCT SEQ ID NO:921	-7.4	-21.6	65.9	-14.2	0	-7.1
1960	TTTTAAAACAAAACCTAACA SEQ ID NO:922	-7.4	-13.7	46.1	-5.8	-0.1	-6
42	AGCTGCCCTCCGGCTCGGCTC SEQ ID NO:923	-7.3	-34	89.6	-24.3	-2.4	-10
358	GGGACAGTCTTTGCAGATAC SEQ ID NO:924	-7.3	-23.6	70.6	-15.8	-0.2	-6
550	CACAACCTTCTCTCTCACAA SEQ ID NO:925	-7.3	-21.4	64.3	-14.1	0	-0.6
570	GACCCGGCAGCATTCTCTTT SEQ ID NO:926	-7.3	-28.7	78.6	-21.4	0	-6.3
626	CTCTCAGAAATCACAGCCGG SEQ ID NO:927	-7.3	-24.3	68.2	-17	0	-6.2
883	TACCTAAATTGCATTTTTAG SEQ ID NO:928	-7.3	-17.8	55.6	-9.6	-0.6	-9.2
901	CCTGTCTCCATGTAAGATTA SEQ ID NO:929	-7.3	-23.1	68	-15.8	0	-5.5
1228	AGCAGCCTTTTGAAATTGCT SEQ ID NO:930	-7.3	-23.5	67.6	-14.9	-1.2	-6.2
1336	CTTAGATTTATCTCTGAGGT SEQ ID NO:931	-7.3	-20.8	65.2	-12.6	-0.7	-6.2
1503	TCATAGGTTTTTATTCTAAC SEQ ID NO:932	-7.3	-17.9	57.8	-10.6	0	-2.7
1761	ATTCTTTCAAATATACTCCT SEQ ID NO:933	-7.3	-19.1	59.1	-11.8	0	-2.7
1776	CCTGTTTGTGCTAAGATTCT SEQ ID NO:934	-7.3	-23.2	69	-15.9	0	-3.8
1816	TACTTCTGAGATATTCCTA SEQ ID NO:935	-7.3	-20.3	62.8	-13	0	-3.8
1844	TTAAATAAGTTCTTCACTTC SEQ ID NO:936	-7.3	-16.8	54.8	-8.4	-1	-4.2
1910	CACACACATTCACAACTCTG SEQ ID NO:937	-7.3	-21.2	62.7	-13.9	0	-1.8
336	AACTCTTCACCAAAAGGATC SEQ ID NO:938	-7.2	-19.9	59.5	-12.7	0	-4.1
547	AACTTCTTCTCTCACAATAT SEQ ID NO:939	-7.2	-19.5	60.6	-12.3	0	-2.4
583	CCTCATTACGGGAGACCCGG SEQ ID NO:940	-7.2	-28.6	74.5	-17.7	-3.7	-11
742	TCTGGATCCACCATGCATCA SEQ ID NO:941	-7.2	-26.7	74.7	-18.1	-1.2	-9.7
880	CTAAATTGCATTTTGTTC SEQ ID NO:942	-7.2	-17.6	56.3	-9.6	-0.4	-8.8
902	ACCTGTCTCCATGTAAGATT SEQ ID NO:943	-7.2	-23.6	69.2	-16.4	0	-5
1080	TCTAGAGAAGCTACCTACCA SEQ ID NO:944	-7.2	-23.6	68.5	-16.4	0	-5.2
1326	TCTCTGAGGTGGCATACGTT SEQ ID NO:945	-7.2	-25.3	73.8	-17.5	-0.3	-6.5
1587	TGACATTTTTTGAAATCCAG SEQ ID NO:946	-7.2	-18.3	56.4	-10.1	-0.9	-4.9

position	oligo	kcal/ mol	kcal/ mol	deg C	kcal/ mol	kcal/mol	kcal/mol
		total binding	duplex formation	Tm of Duplex	target structure	Intra- molecular oligo	Inter- molecular oligo
1991	TCTTTTTTATTGAACAATAA SEQ ID NO:947	-7.2	-14.7	49.4	-6.7	-0.4	-8.7
283	GCCACACTTCATGCCATCCA SEQ ID NO:948	-7.1	-29.3	79.1	-22.2	0	-4.4
314	CCCCATTAGAAGGCTGACAC SEQ ID NO:949	-7.1	-26	71.3	-18.9	0	-3.7
359	AGGGACAGTCTTTGCAGATA SEQ ID NO:950	-7.1	-23.4	70.3	-15.8	-0.2	-6
360	TAGGGACAGTCTTTGCAGAT SEQ ID NO:951	-7.1	-23.4	70.3	-15.8	-0.2	-6
369	AAGGTGCCGTAGGGACAGTC SEQ ID NO:952	-7.1	-26.7	75.9	-18	-1.5	-7.9
524	CATCTCCAGATGCCATGTCA SEQ ID NO:953	-7.1	-26.5	75.2	-18.7	-0.5	-6.9
753	ACTTTTGTGTTTTCTGGATCC SEQ ID NO:954	-7.1	-22.5	68.4	-14.9	0	-7.5
862	TCTTCAGTGTTACTATACAC SEQ ID NO:955	-7.1	-20.3	64	-11.9	-1.2	-5.2
952	TAATTTGACTCACTGCGGTC SEQ ID NO:956	-7.1	-22.5	66.2	-14.9	-0.1	-6.2
1014	TTCTCTGCTCTTAAGTCTT SEQ ID NO:957	-7.1	-24.4	73.7	-17.3	0	-6
1327	ATCTCTGAGGTGGCATAACGT SEQ ID NO:958	-7.1	-25.2	73.4	-17.5	-0.3	-6.5
1721	GTTGACATGTTTTCTGCTGA SEQ ID NO:959	-7.1	-22.9	69.3	-15.8	0	-7.1
1837	AGTTCTTCACTTCAAATAAA SEQ ID NO:960	-7.1	-17	54.4	-9.9	0	-2.3
59	CGCTCTTCATGTTTCCAGC SEQ ID NO:961	-7	-28.3	79.2	-21.3	0	-4.7
132	CAGTCCACCGCATAATTATT SEQ ID NO:962	-7	-23.4	66	-16.4	0	-5.6
231	CGCCCTGCAGCGCACACTCG SEQ ID NO:963	-7	-32.3	80.9	-23.9	-1.2	-10.1
702	TACATGTACTTATGCTATAT SEQ ID NO:964	-7	-18.5	58.3	-11.5	0	-7.3
810	TTTAACAACACATACAAGT SEQ ID NO:965	-7	-15.6	50.4	-8.6	0	-2.8
1197	GCTGTTTGTTACTCAAATTT SEQ ID NO:966	-7	-20.1	61.9	-11.5	-1.6	-6.5
1223	CCTTTTGAAATGCTCTCAG SEQ ID NO:967	-7	-21.6	64	-14.6	0	-3.6
1408	ACACATTTATTTATAAAAAT SEQ ID NO:968	-7	-12.5	44.4	-4.8	-0.4	-6.5
1508	TAGAGTCATAGGTTTTTATT SEQ ID NO:969	-7	-18.9	61	-11.9	0	-4.8
1613	ATAAGGTCCCTCTGTTGCTC SEQ ID NO:970	-7	-26.4	76.9	-19.4	0	-4.7
1624	CTTATGTTTAAATAAGGTCC SEQ ID NO:971	-7	-18.2	56.9	-10.4	-0.6	-5.6
1762	GATTCCTTCAAATATACTCC SEQ ID NO:972	-7	-18.8	58.4	-11.8	0	-2.7
1772	TTTGTGCTAAGATTCTTTCA SEQ ID NO:973	-7	-20.4	63.4	-12.9	-0.1	-5.6
1941	AGCTTATGCAGCTTTACATT SEQ ID NO:974	-7	-22.6	67.8	-13.7	-1.9	-6.9
273	ATGCCATCCATGCCCTGAGAC SEQ ID NO:975	-6.9	-27.7	75.8	-20.8	0	-4.2
354	CAGTCTTGCAGATACCAAA SEQ ID NO:976	-6.9	-21.7	63.9	-14.3	-0.2	-5.2

position	oligo	kcal/ mol	kcal/ mol	deg C	kcal/ mol	kcal/mol	kcal/mol
		total binding	duplex formation	Tm of Duplex	target struc- ture	Intra- molecular oligo	Inter- molecular oligo
355	ACAGTCTTTGCAGATACCAA SEQ ID NO:977	-6.9	-22.6	66.6	-15.2	-0.2	-5.2
551	TCACAACTTCTTCTCTCACA SEQ ID NO:978	-6.9	-22.5	68.1	-15.6	0	-0.6
639	AAAATAGAGCCTTCTCTCAG SEQ ID NO:979	-6.9	-20.7	62.4	-12.3	-1.4	-5.1
662	TGGCTGTGTGTTGAACAATC SEQ ID NO:980	-6.9	-22.1	66	-14.3	-0.7	-7.8
704	ATTACATGTACTTATGCTAT SEQ ID NO:981	-6.9	-18.9	59.3	-11.5	0	-7.7
1616	TAAATAAGGTCCCTCTGTTG SEQ ID NO:982	-6.9	-21.6	63.7	-14.7	0	-4.7
1632	TCACAGCACTTATGTTTAAA SEQ ID NO:983	-6.9	-19.1	58.9	-12.2	0	-5.2
1664	TTTTCATACCTTAAATTGAA SEQ ID NO:984	-6.9	-16.6	52.8	-9.2	-0.1	-3.6
1800	CCTAAGAACATCTAGTACAA SEQ ID NO:985	-6.9	-18.8	57.5	-11.9	0	-5.7
447	GGGAATTTTCAGGCATTTTCC SEQ ID NO:986	-6.8	-24	69.9	-16.3	-0.8	-5
449	AGGGGAATTTTCAGGCATTTT SEQ ID NO:987	-6.8	-22.8	67.5	-16	0	-5
525	CCATCTCCAGATGCCATGTC SEQ ID NO:988	-6.8	-27.8	77.7	-19.9	-1	-7.8
830	AATCTACATGCATTCGAATA SEQ ID NO:989	-6.8	-18.6	56.7	-11.2	0	-8.4
835	TAACAAATCTACATGCATTC SEQ ID NO:990	-6.8	-17.4	54.6	-10.6	0	-6.7
988	ATATCCCAACATTAATGTAC SEQ ID NO:991	-6.8	-19.2	57.9	-11.1	-0.2	-10.5
1629	CAGCACTTATGTTTAAATAA SEQ ID NO:992	-6.8	-16.8	53.5	-10	0	-5.4
1722	AGTTGACATGTTTTCTGCTG SEQ ID NO:993	-6.8	-22.3	68.1	-15.5	0	-6.5
263	TGCCTGAGACTGTGCGGTAG SEQ ID NO:994	-6.7	-26.9	75.7	-19.6	-0.3	-5.4
298	ACACCTCAGCCCGGGCCAC SEQ ID NO:995	-6.7	-34.8	87	-26.2	-1.8	-11.2
300	TGACACCTCAGCCCGGGCC SEQ ID NO:996	-6.7	-34.5	86.5	-25.9	-1.8	-11.3
401	GGCAGTTGCAGGTCTCTCTG SEQ ID NO:997	-6.7	-27.8	83.1	-20.2	-0.7	-6.6
751	TTTTTGTTTTCTGGATCCAC SEQ ID NO:998	-6.7	-22.3	67.6	-14.7	0	-9.7
817	TCGAATATTTAACAACACA SEQ ID NO:999	-6.7	-15.3	49.3	-8.6	0	-4.8
1666	TATTTTCATACCTTAAATTG SEQ ID NO:1000	-6.7	-16.4	52.8	-9.7	0	-3.2
1756	TTCAAATATACTCCTAATTC SEQ ID NO:1001	-6.7	-17.1	54.4	-10.4	0	-2.9
1986	TTTATGAACAATAATAAAC SEQ ID NO:1002	-6.7	-11.6	42.7	-3.5	-1.3	-9
183	CTCTTGCAGCGGGCTGCT SEQ ID NO:1003	-6.6	-31.8	84.7	-19.7	-5.5	-15.6
294	CTCAGCCCGGGCCACACTT SEQ ID NO:1004	-6.6	-33.6	85.4	-25.1	-1.8	-11.2
523	ATCTCCAGATGCCATGTCAT SEQ ID NO:1005	-6.6	-25.8	74	-18.7	-0.1	-4.3
1150	TCAGGGGTTTTCTGGTTGTT SEQ ID NO:1006	-6.6	-25.3	76.8	-17.8	-0.7	-4.2

position	oligo	kcal/ mol	kcal/ mol	deg C	kcal/ mol	kcal/mol	kcal/mol
		total binding	duplex formation	Tm of Duplex	target structure	Intra- molecular oligo	Inter- molecular oligo
1233	ACATCAGCAGCCTTTTAAAA SEQ ID NO:1007	-6.6	-22.7	65.7	-16.1	0	-4.5
1291	AGTGTATGTGTTTCCTATGC SEQ ID NO:1008	-6.6	-23.5	71.8	-16.9	0	-2.6
1318	GTGGCATACTGTTAAAGCTAT SEQ ID NO:1009	-6.6	-21.6	63.4	-14.3	-0.4	-5.1
1370	ATACACACACAAACCACCAG SEQ ID NO:1010	-6.6	-21.7	61.5	-15.1	0	-0.9
1488	CTAACCATTTCACAAATA SEQ ID NO:1011	-6.6	-16.7	52.3	-9.6	-0.1	-2.7
1726	TTAAAGTTGACATGTTTCT SEQ ID NO:1012	-6.6	-18	57.3	-11.4	0	-7.1
1966	ATGTCCTTTTAAAAACAAAC SEQ ID NO:1013	-6.6	-15.4	49.8	-8.2	-0.3	-6.2
217	CACTCGGCAGCAGCCACAGT SEQ ID NO:1014	-6.5	-29.8	81.2	-20.6	-2.7	-9.3
451	GAAGGGGAATTCAGGCATT SEQ ID NO:1015	-6.5	-22.5	65.8	-16	0	-5
638	AAATAGAGCCTTCTCTCAGA SEQ ID NO:1016	-6.5	-22	65.9	-13.8	-1.7	-5.1
827	CTACATGCATTCGAATATT SEQ ID NO:1017	-6.5	-19.1	57.9	-12	0	-8.4
836	TTAACAATCTACATGCATT SEQ ID NO:1018	-6.5	-17.1	53.7	-10.6	0	-6.7
837	TTAACAATCTACATGCAT SEQ ID NO:1019	-6.5	-17.1	53.7	-10.6	0	-6.4
1216	AAATTGCTCTCAGTTCAAAG SEQ ID NO:1020	-6.5	-18.8	58.3	-12.3	0	-3.2
1325	CTCTGAGGTGGCATACTGTTA SEQ ID NO:1021	-6.5	-24.6	71.5	-17.5	-0.3	-5.2
1363	CACAAACCACAGTGGGTAA SEQ ID NO:1022	-6.5	-23.8	66.1	-16	-1.2	-9
1757	TTTCAAATATACTCCTAATT SEQ ID NO:1023	-6.5	-16.8	53.5	-10.3	0	-2.7
1845	CTTAAATAAGTTCTTCACTT SEQ ID NO:1024	-6.5	-17.3	55.4	-9.9	-0.8	-4.2
1899	ACAACTCTGTTGGCCAACTT SEQ ID NO:1025	-6.5	-24.1	68.8	-14.2	-1.8	-15
1987	TTTTATTGAACAATAATAAA SEQ ID NO:1026	-6.5	-11.5	42.5	-3.5	-1.4	-9
73	GGTCAGCAGCAAGACGCTCT SEQ ID NO:1027	-6.4	-27.4	77.5	-19.5	-1.4	-8.5
430	TCCCGTCCCCCTGTCACAGA SEQ ID NO:1028	-6.4	-33.5	86.4	-26.5	-0.3	-5.2
459	TATTGGAAGAAGGGGAATTT SEQ ID NO:1029	-6.4	-18.5	56.7	-12.1	0	-3.3
808	TAACAAACACATACAAGTGT SEQ ID NO:1030	-6.4	-16.6	52.4	-8.6	-1.6	-6
890	GTAAGATTACCTAAATTGCA SEQ ID NO:1031	-6.4	-18.6	56.9	-12.2	0	-5.3
1056	AGGGCTAAATATTTTATTTT SEQ ID NO:1032	-6.4	-17.7	56.3	-10.5	-0.6	-8.2
1062	CAAGGAAGGGCTAAATATTT SEQ ID NO:1033	-6.4	-18.4	56.1	-12	0	-6.4
1142	TTTCTGGTTGTTTATTTTG SEQ ID NO:1034	-6.4	-19.5	62.1	-13.1	0	-1.5
1410	TAACACATTTATTTATAAAA SEQ ID NO:1035	-6.4	-12.2	43.9	-4.8	-0.9	-6.5
1549	GGATAATAAATTTATCATGC SEQ ID NO:1036	-6.4	-15.9	51.5	-6.9	-2.6	-7.6

position	oligo	kcal/ mol	kcal/ mol	deg C	kcal/ mol	kcal/mol	kcal/mol
		total binding	duplex formation	Tm of Duplex	target structure	Intra- molecular oligo	Inter- molecular oligo
1634	AGTCACAGCACTTATGTTTA SEQ ID NO:1037	-6.4	-21.7	66.8	-15.3	0	-4.1
1688	TTTTCACAAACCTCCTAAAA SEQ ID NO:1038	-6.4	-16.8	52	-10.4	0	-3.2
1917	GGCCTTCCACACACATTAC SEQ ID NO:1039	-6.4	-27.2	75.7	-20.3	-0.2	-6.4
131	AGTCCACCGCATAATTATTG SEQ ID NO:1040	-6.3	-22.7	64.8	-16.4	0	-5.6
460	ATATTGGAAGAAGGGGAATT SEQ ID NO:1041	-6.3	-18.4	56.4	-12.1	0	-3.1
637	AATAGAGCCTTCTCTCAGAA SEQ ID NO:1042	-6.3	-22	65.9	-14	-1.7	-6.3
816	CGAATATTTAACAAACACAT SEQ ID NO:1043	-6.3	-14.9	48.3	-8.6	0	-4.8
1081	TTCTAGAGAAGCTACCTACC SEQ ID NO:1044	-6.3	-23	67.7	-16.7	0	-5.8
1198	AGCTGTTTGTACTCAAATT SEQ ID NO:1045	-6.3	-20	61.8	-12.5	-1.1	-9.3
1379	TTTACCTTCATACACACACA SEQ ID NO:1046	-6.3	-21.5	63.6	-15.2	0	-0.9
1434	ATGGGTAGGGAAGATGACTT SEQ ID NO:1047	-6.3	-22	65.5	-15	-0.5	-3.2
1435	TATGGGTAGGGAAGATGACT SEQ ID NO:1048	-6.3	-21.6	64.6	-15.3	0	-2.1
1635	AAGTCACAGCACTTATGT SEQ ID NO:1049	-6.3	-21.3	65	-15	0	-4.3
1637	CGAAGTCACAGCACTTATGT SEQ ID NO:1050	-6.3	-22.5	66	-15.5	-0.5	-4.6
1689	CTTTTACAAACCTCCTAAAA SEQ ID NO:1051	-6.3	-18.4	55.3	-12.1	0	-3.2
1944	AACAGCTTATGCAGCTTTAC SEQ ID NO:1052	-6.3	-22	65.7	-13.7	-2	-6.9
60	ACGCTCTTCATGTTTCCAG SEQ ID NO:1053	-6.2	-26.7	75.4	-20.5	0	-4.7
97	CAGGTGTGCAGGCACGAGGA SEQ ID NO:1054	-6.2	-27.9	77.9	-19.2	-2.5	-10
384	CTGCAATCCATCCGAAGGT SEQ ID NO:1055	-6.2	-27.3	72.8	-19.8	-1.2	-7.1
566	CGGCAGCATTCTTTTACA SEQ ID NO:1056	-6.2	-25.9	74.1	-19.7	0	-5.3
813	ATATTTAACAAACACATACA SEQ ID NO:1057	-6.2	-14.8	48.8	-8.6	0	-2.4
1208	CTCAGTTCAAAGCTGTTTGT SEQ ID NO:1058	-6.2	-22.3	67.8	-14.6	-1.4	-6.8
1251	ACAGGTAACCCGGGAACACT SEQ ID NO:1059	-6.2	-24.6	67.6	-16.8	-1.1	-11
45	CCCAGCTGCCTCCGGCTCGG SEQ ID NO:1060	-6.1	-35.6	88.8	-27.1	-2.4	-10.5
46	TCCCAGCTGCCTCCGGCTCG SEQ ID NO:1061	-6.1	-34.8	88.3	-26.6	-2.1	-8.2
69	AGCAGCAAGACGCTCTTCAT SEQ ID NO:1062	-6.1	-25.1	71.8	-17.7	-1.2	-6
133	GCAGTCCACCGCATAATTAT SEQ ID NO:1063	-6.1	-25.1	69.6	-19	0	-5.6
284	GGCCACACTTCATGCCATCC SEQ ID NO:1064	-6.1	-29.8	80.6	-22.2	-1.4	-7.6
403	CTGGCAGTTGCAGGTCTCTC SEQ ID NO:1065	-6.1	-27.8	83.1	-20.8	-0.7	-6.6
462	GAATATTGGAAGAAGGGGAA SEQ ID NO:1066	-6.1	-18.2	55.6	-12.1	0	-4.6

position	oligo	kcal/ mol	kcal/ mol	deg C	kcal/ mol	kcal/mol	kcal/mol
		total binding	duplex form- ation	Tm of Duplex	target struc- ture	Intra- molecular oligo	Inter- molecular oligo
565	GGCAGCATTCTCTTCACAA SEQ ID NO:1067	-6.1	-24.4	71.7	-18.3	0	-5.3
809	TTAACAAACACATACAAGTG SEQ ID NO:1068	-6.1	-15.5	50.1	-8.6	-0.6	-4.7
818	TTCGAATATTTAACAAACAC SEQ ID NO:1069	-6.1	-14.7	48.4	-8.6	0	-6.2
1055	GGGCTAAATATTTATTTCC SEQ ID NO:1070	-6.1	-19.7	60	-12.9	-0.4	-8.2
1285	TGTGTTTCCTATGCCCCAGA SEQ ID NO:1071	-6.1	-28.7	79.2	-22.6	0	-3
1332	GATTTATCTCTGAGGTGGCA SEQ ID NO:1072	-6.1	-23.8	71.5	-17.7	0	-6.2
1362	ACAAACCACCGTGGGTAAA SEQ ID NO:1073	-6.1	-22.4	63.1	-15.1	-1.1	-8.2
1407	CACATTTATTTATAAAAATA SEQ ID NO:1074	-6.1	-12	43.5	-4.8	-1	-6.5
1586	GACATTTTTTGAAATCCAGA SEQ ID NO:1075	-6.1	-18.9	57.7	-11.8	-0.9	-4.3
1773	GTTTGTGCTAAGATTCTTTC SEQ ID NO:1076	-6.1	-20.9	65.5	-14.8	0	-5.6
1922	TCAAAGGCCTTCACACACA SEQ ID NO:1077	-6.1	-25.5	70.4	-18.1	-0.2	-10.6
13	GGTCTTTGCTGTGGGAAGC SEQ ID NO:1078	-6	-27.1	78.8	-20.3	-0.6	-5.1
63	AAGACGCTCTTCATGTTTCC SEQ ID NO:1079	-6	-23.9	69.6	-17.2	-0.4	-6.8
429	CCCGTCCCCCTGTACAGAT SEQ ID NO:1080	-6	-33.1	84.5	-26.5	-0.3	-5.2
450	AAGGGGAATTCAGGCATTT SEQ ID NO:1081	-6	-22	64.9	-16	0	-4.2
569	ACCCGGCAGCATCTCTTTC SEQ ID NO:1082	-6	-28.5	79.1	-22.5	0	-6.3
648	ACAATCACGAAATAGAGCC SEQ ID NO:1083	-6	-18.9	56	-12.9	0	-3.5
1049	AATATTTTATTTCCCACTCC SEQ ID NO:1084	-6	-21.8	64	-15.8	0	-3.8
1190	GTTACTCAAATTTCCATAAG SEQ ID NO:1085	-6	-18.1	56.4	-12.1	0	-4.5
1249	AGGTAACCCGGGAACATACAT SEQ ID NO:1086	-6	-24.4	67.1	-16.8	-1.1	-11
1409	AACACATTTATTTATAAAAA SEQ ID NO:1087	-6	-11.8	43	-4.8	-0.9	-6.5
1657	ACCTTAAATTGAAAATTCAC SEQ ID NO:1088	-6	-15.5	50	-8.2	-1.2	-5.7
1758	CTTTCAAATATACTCCTAAT SEQ ID NO:1089	-6	-17.6	55	-11.6	0	-2.7
337	AAACTCTTCACCAAAGGAT SEQ ID NO:1090	-5.9	-18.8	56.4	-12.9	0	-3.7
342	ATACCAAACCTTCACCAAA SEQ ID NO:1091	-5.9	-20.3	59.1	-14.4	0	-0.9
545	CTTCTTCTCTCACAATATTG SEQ ID NO:1092	-5.9	-20.1	62.5	-13.7	0	-8.2
972	GTACATCAAAGTCAAAGAAC SEQ ID NO:1093	-5.9	-16.5	52.8	-10.6	0	-4.6
974	ATGTACATCAAAGTCAAAGA SEQ ID NO:1094	-5.9	-17	54	-10.6	0	-7.6
1120	TTTTCCCAAAGCCAAAAAA SEQ ID NO:1095	-5.9	-18.3	53.6	-12.4	0	-3.2
1124	TGACTTTTCCCAAAGCCAAA SEQ ID NO:1096	-5.9	-22.8	63.5	-15.5	-1.3	-5.3

position	oligo	kcal/ mol total binding	kcal/ mol duplex formation	deg C Tm of Duplex	kcal/ mol target structure	kcal/mol Intra- molecular oligo	kcal/mol Inter- molecular oligo
1224	GCCTTTTGAAATTGCTCTCA SEQ ID NO:1097	-5.9	-23.4	67.9	-17.5	0	-3.9
1371	CATACACACAAAACCACCA SEQ ID NO:1098	-5.9	-22.4	62.4	-16.5	0	-0.9
1617	TTAAATAAGGTCCCTCTGTT SEQ ID NO:1099	-5.9	-21.7	64.2	-15.8	0	-4.7
1809	GAGATATTTCTTAAGAACAT SEQ ID NO:1100	-5.9	-18.2	56.5	-11.8	-0.2	-4
1810	TGAGATATTTCTTAAGAACA SEQ ID NO:1101	-5.9	-18.2	56.5	-11.8	-0.2	-4.6
1889	TGGCCAACCTCAAGAATAAA SEQ ID NO:1102	-5.9	-18.8	56.1	-12.4	0	-8.3
293	TCAGCCCCGGGCCACACTTC SEQ ID NO:1103	-5.8	-33.1	85.4	-25.4	-1.8	-11.2
297	CACCTCAGCCCCGGGCCACA SEQ ID NO:1104	-5.8	-35.3	87.2	-27.6	-1.8	-11.2
811	ATTTAACAACACATACAAG SEQ ID NO:1105	-5.8	-14.4	47.9	-8.6	0	-2.4
893	CATGTAAGATTACCTAAATT SEQ ID NO:1106	-5.8	-16.8	53.1	-11	0	-4.9
1061	AAGGAAGGGCTAAATATTTT SEQ ID NO:1107	-5.8	-17.8	55.2	-12	0	-6.6
1207	TCAGTTCAAAGCTGTTTGTT SEQ ID NO:1108	-5.8	-21.5	66.1	-14.2	-1.4	-6.8
1230	TCAGCAGCCTTTTGAAATTG SEQ ID NO:1109	-5.8	-21.9	64.3	-16.1	0	-4.5
1463	AGATTTCTTTCCTCAAGAGG SEQ ID NO:1110	-5.8	-21.8	66.2	-15.2	-0.6	-7.9
1662	TTCATACCTTAAATTGAAAA SEQ ID NO:1111	-5.8	-15	49	-9.2	0	-3.5
1746	CTCCTAATCCACCTATATT SEQ ID NO:1112	-5.8	-23	66.2	-17.2	0	-2.6
1829	ACTTCAAATAAAATACTTCT SEQ ID NO:1113	-5.8	-14.7	49	-8.9	0	-1.2
1945	TAACAGCTTATGCAGCTTTA SEQ ID NO:1114	-5.8	-21.5	64.6	-13.7	-2	-6.9
1962	CCTTTTAAACAAAACCTAA SEQ ID NO:1115	-5.8	-15.7	49.5	-9.3	-0.3	-6.2
1963	TCCTTTTAAACAAAACCTA SEQ ID NO:1116	-5.8	-16.8	52	-10.4	-0.3	-6.2
1	TGGGAAGCAGCCGTGACCCA SEQ ID NO:1117	-5.7	-30.1	78.4	-22.5	-1.9	-6.9
385	TCTGCAATCCATCCCGAAGG SEQ ID NO:1118	-5.7	-26.5	71.2	-19.8	-0.9	-6.7
452	AGAAGGGGAATTTTCAGGCAT SEQ ID NO:1119	-5.7	-22.4	65.7	-16	-0.5	-5
646	AATCACGAAAAATAGAGCCTT SEQ ID NO:1120	-5.7	-19	56.4	-13.3	0	-3.2
664	GTTGGCTGTGTGTTGAACAA SEQ ID NO:1121	-5.7	-23	68.1	-16.4	-0.7	-7.8
743	TTCTGGATCCACCATGCATC SEQ ID NO:1122	-5.7	-26.1	73.9	-19	-1.2	-9.7
973	TGTACATCAAAGTCAAAGAA SEQ ID NO:1123	-5.7	-16.3	52.2	-10.6	0	-5.9
1136	GTTGTTTTATTTTGACTTTT SEQ ID NO:1124	-5.7	-18.8	60.3	-13.1	0	-2.5
1210	CTCTCAGTTCAAAGCTGTTT SEQ ID NO:1125	-5.7	-22.4	68.2	-15.3	-1.3	-5.1
1317	TGGCATACGTTAAAGCTATT SEQ ID NO:1126	-5.7	-20.5	60.8	-14.1	-0.4	-5.1

position	oligo	kcal/ mol	kcal/ mol	deg C	kcal/ mol	kcal/mol	kcal/mol
		total binding	duplex formation	Tm of Duplex	target structure	Intra- molecular oligo	Inter- molecular oligo
1509	ATAGAGTCATAGGTTTTTAT SEQ ID NO:1127	-5.7	-18.8	60.6	-13.1	0	-4.8
1621	ATGTTTAAATAAGGTCCCTC SEQ ID NO:1128	-5.7	-20.8	62.2	-15.1	0	-5.1
1633	GTCACAGCACTTATGTTTAA SEQ ID NO:1129	-5.7	-21	64.2	-15.3	0	-5.8
1661	TCATACCTTAAATTGAAAAT SEQ ID NO:1130	-5.7	-14.9	48.8	-9.2	0	-3.2
1663	TTTCATACCTTAAATTGAAA SEQ ID NO:1131	-5.7	-15.8	50.9	-9.2	-0.8	-4.3
1767	GCTAAGATTCTTTCAAATAT SEQ ID NO:1132	-5.7	-17.3	55	-11.6	0.6	-5.6
67	CAGCAAGACGCTCTTCATGT SEQ ID NO:1133	-5.6	-24.5	70.4	-17.6	-1.2	-6.9
206	AGCCACAGTCGTCGAGCACT SEQ ID NO:1134	-5.6	-28.4	78.4	-22.2	-0.3	-5.3
275	TCATGCCATCCATGCCTGAG SEQ ID NO:1135	-5.6	-28	76.7	-20.6	-1.8	-5
292	CAGCCCCGGGCCACACTCA SEQ ID NO:1136	-5.6	-33.4	84.6	-25.9	-1.8	-11.2
669	AAAATGTTGGCTGTGTGTG SEQ ID NO:1137	-5.6	-20.8	62.6	-15.2	0	-3.7
970	ACATCAAAGTCAAAGAACTA SEQ ID NO:1138	-5.6	-16.2	51.9	-10.6	0	-3
971	TACATCAAAGTCAAAGAACT SEQ ID NO:1139	-5.6	-16.2	51.9	-10.6	0	-2.9
1006	CTCTTAAGTCTTCATTCCAT SEQ ID NO:1140	-5.6	-22.2	67.5	-16.6	0	-6
1007	GCTCTTAAGTCTTCATTCCA SEQ ID NO:1141	-5.6	-24	72	-18.4	0	-6
1328	TATCTCTGAGGTGGCATACG SEQ ID NO:1142	-5.6	-23.7	69.4	-17.5	-0.3	-6.5
1690	TCTTTTACAAACCTCCTAAA SEQ ID NO:1143	-5.6	-19.5	58.2	-13.9	0	-2.3
1806	ATATTTCTTAAGAACATCTA SEQ ID NO:1144	-5.6	-18	56.4	-11.9	-0.2	-3.1
1830	CACTTCAAATAAAATACTTC SEQ ID NO:1145	-5.6	-14.5	48.4	-8.9	0	-1.2
1971	TAAACATGTCTTTTAAAC SEQ ID NO:1146	-5.6	-15.8	50.8	-10.2	0	-6.9
50	TGTTTCCCAGCTGCCTCCGG SEQ ID NO:1147	-5.5	-32.3	85.2	-26.3	0	-8.1
147	TCACAGTGTGAGGGCAGTC SEQ ID NO:1148	-5.5	-25.6	77.3	-20.1	0	-6.5
458	ATGGAAGAAGGGGAATTTC SEQ ID NO:1149	-5.5	-19.2	58.6	-13.7	0	-3.8
461	AATATTGGAAGAAGGGGAAT SEQ ID NO:1150	-5.5	-17.6	54.4	-12.1	0	-3.8
619	AAATCACAGCCGGGATCAGC SEQ ID NO:1151	-5.5	-25.1	69.5	-19.6	0	-6.9
812	TATTTAACAAACACATACAA SEQ ID NO:1152	-5.5	-14.1	47.3	-8.6	0	-2.4
1215	AATTGCTCTCAGTTCAAAGC SEQ ID NO:1153	-5.5	-21.3	64.5	-15.2	-0.3	-3.9
1329	TTATCTCTGAGGTGGCATAC SEQ ID NO:1154	-5.5	-23	69.7	-17.5	0	-6.2
1378	TTACCTTCATACACACACAA SEQ ID NO:1155	-5.5	-20.7	61.2	-15.2	0	-0.9
1406	ACATTTATTTATAAAAATAT SEQ ID NO:1156	-5.5	-11.3	42.2	-4.8	-0.9	-6.5

position	oligo	kcal/ mol	kcal/ mol	deg C	kcal/ mol	kcal/mol	kcal/mol
		total binding	duplex formation	Tm of Duplex	target structure	Intra- molecular oligo	Inter- molecular oligo
1436	ATATGGGTAGGGAAGATGAC SEQ ID NO:1157	-5.5	-20.7	62.6	-15.2	0	-2
1744	CCTAATTCCACCTATATTTT SEQ ID NO:1158	-5.5	-21.9	63.6	-16.4	0	-2.9
1834	TCTTCACTTCAAATAAAATA SEQ ID NO:1159	-5.5	-14.7	49	-9.2	0	-1.2
1890	TTGGCCAACTTCAAGAATAA SEQ ID NO:1160	-5.5	-19.6	58.1	-13	0	-10.2
1921	CAAAGGCCTTCCACACACAT SEQ ID NO:1161	-5.5	-25.1	68.9	-18.1	-1	-10.6
47	TTCCCAGCTGCCTCCGGCTC SEQ ID NO:1162	-5.4	-34.1	89.5	-26.6	-2.1	-8.3
226	TGCAGCGCACACTCGGCAGC SEQ ID NO:1163	-5.4	-30.3	80.9	-23.6	-1.2	-8.5
622	CAGAAATCACAGCCGGGATC SEQ ID NO:1164	-5.4	-23.9	66.8	-18.5	0	-6.9
954	ACTAATTTGACTCACTGCGG SEQ ID NO:1165	-5.4	-22	64.1	-16.6	0	-4.7
955	AACTAATTTGACTCACTGCG SEQ ID NO:1166	-5.4	-20.1	59.7	-14.7	0	-4
1141	TTCTGGTTGTTTATTTTGA SEQ ID NO:1167	-5.4	-20	63.2	-14.6	0	-2.1
1181	ATTTCCATAAGCTTCAAACA SEQ ID NO:1168	-5.4	-19.7	59.2	-14.3	0	-6.8
1234	TACATCAGCAGCCTTTTGAA SEQ ID NO:1169	-5.4	-23.1	67.4	-17.7	0	-4.5
1330	TTTATCTCTGAGGTGGCATA SEQ ID NO:1170	-5.4	-22.9	69.5	-17.5	0	-5.6
1553	TTATGGATAATAAATTATC SEQ ID NO:1171	-5.4	-13.2	46.2	-6.9	-0.7	-8.1
1554	ATTATGGATAATAAATTTAT SEQ ID NO:1172	-5.4	-12.8	45.2	-6.8	-0.3	-7.9
1795	GAACATCTAGTACAACAGTC SEQ ID NO:1173	-5.4	-19.4	60.4	-14	0	-5.3
1898	CAACTCTGTTGGCCAACTTC SEQ ID NO:1174	-5.4	-24.3	69.8	-15.5	-0.9	-15
254	CTGTGCGGTAGCAAGTTTCT SEQ ID NO:1175	-5.3	-25.3	73.6	-18	-2	-5.6
282	CCACACTTCATGCCATCCAT SEQ ID NO:1176	-5.3	-27.5	74.9	-22.2	0	-4.4
521	CTCCAGATGCCATGTCATGC SEQ ID NO:1177	-5.3	-27.2	76.6	-21.9	0.3	-4.5
597	GGATTTAACCATTTCCTCAT SEQ ID NO:1178	-5.3	-22.5	65.6	-17.2	0	-3.4
660	GCTGTGTGTTGAACAATCAC SEQ ID NO:1179	-5.3	-21.8	65.2	-15.6	-0.8	-6.6
705	AATTACATGTACTTATGCTA SEQ ID NO:1180	-5.3	-18.2	57.2	-12.4	0	-7.7
831	AAATCTACATGCATTTCGAAT SEQ ID NO:1181	-5.3	-18.2	55.4	-12.4	0	-8
1433	TGGGTAGGGAAGATGACTTG SEQ ID NO:1182	-5.3	-22	65.4	-15.8	-0.7	-3.1
1582	TTTTTTGAAATCCAGAGTGA SEQ ID NO:1183	-5.3	-19.2	59	-13.9	0	-3.3
1583	ATTTTTTGAATCCAGAGTG SEQ ID NO:1184	-5.3	-18.6	57.7	-12.4	-0.7	-4.3
1667	TTATTTTCATACCTTAAATT SEQ ID NO:1185	-5.3	-16.5	53.1	-11.2	0	-2.9
1753	AAATATACTCCTAATTCCAC SEQ ID NO:1186	-5.3	-18.8	57.1	-13.5	0	-2.9

position	oligo	kcal/ mol	kcal/ mol	deg C	kcal/ mol	kcal/mol	kcal/mol
		total binding	duplex formation	Tm of Duplex	target structure	Intra- molecular oligo	Inter- molecular oligo
1771	TTGTGCTAAGATTCTTTCAA SEQ ID NO:1187	-5.3	-19.6	60.8	-13.8	-0.1	-5.6
1804	ATTTCCCTAAGAACATCTAGT SEQ ID NO:1188	-5.3	-19.5	60.2	-13.7	-0.2	-4.2
1850	TAATTCTTTAAATAAGTTCTT SEQ ID NO:1189	-5.3	-14.5	49.3	-9.2	0	-4.3
1961	CTTTTAAACAAAACCTAAC SEQ ID NO:1190	-5.3	-13.9	46.6	-8	-0.3	-6.2
1993	GTTCTTTTTTATTGAACAAT SEQ ID NO:1191	-5.3	-17	54.8	-10.2	-1.4	-5.5
304	AGGCTGACACCTCAGCCCCG SEQ ID NO:1192	-5.2	-32.2	83.1	-20.9	-6.1	-14
381	CAATCCATCCCGAAGGTGCC SEQ ID NO:1193	-5.2	-28.4	74.3	-21.9	-1.2	-6
617	ATCACAGCCGGGATCAGCGT SEQ ID NO:1194	-5.2	-28.5	77.2	-22.4	-0.7	-6.9
815	GAATATTTAACAACACATA SEQ ID NO:1195	-5.2	-13.8	46.8	-8.6	0	-4.8
838	ATTTAACAAATCTACATGCA SEQ ID NO:1196	-5.2	-17.1	53.7	-11.9	0	-5.2
1151	TTCAGGGGTTTTCTGGTTGT SEQ ID NO:1197	-5.2	-25.3	76.8	-19.2	-0.7	-4.2
1670	AACTTATTTTCATACCTTAA SEQ ID NO:1198	-5.2	-17.5	55.2	-12.3	0	-2
1797	AAGAACATCTAGTACAACAG SEQ ID NO:1199	-5.2	-17.1	54.3	-11.9	0	-5.7
1929	TTTACATTCAAAGCCTTCC SEQ ID NO:1200	-5.2	-23	66.5	-16.5	0	-10.6
48	TTTCCAGCTGCCCTCCGGCT SEQ ID NO:1201	-5.1	-33.8	88	-26.6	-2.1	-8.3
182	TCCTGCAGCGCGGGCTGCTT SEQ ID NO:1202	-5.1	-31	83.2	-19.7	-6.2	-16.3
573	GGAGACCCGGCAGCATCTC SEQ ID NO:1203	-5.1	-29.4	80.1	-23.6	-0.5	-6.3
661	GGCTGTGTGTTGAACAATCA SEQ ID NO:1204	-5.1	-22.8	67.3	-17	-0.4	-4.9
1214	ATTGCTCTCAGTTCAAAGCT SEQ ID NO:1205	-5.1	-22.9	68.8	-16.6	-1.1	-4.8
1335	TTAGATTTATCTCTGAGGTG SEQ ID NO:1206	-5.1	-19.9	62.9	-13.9	-0.7	-6.2
159	CACTCACTGCTGTCACAGTG SEQ ID NO:1207	-5	-25.1	74	-17	-3.1	-9.1
208	GCAGCCACAGTCGTCGAGCA SEQ ID NO:1208	-5	-29.8	81.3	-24.2	-0.3	-4.9
230	GCCCTGCAGCGCACACTCGG SEQ ID NO:1209	-5	-32.7	83.8	-26.8	-0.7	-9.2
349	TTTGCAGATACCAAACCTCTT SEQ ID NO:1210	-5	-21	62.2	-15.5	-0.1	-5.2
425	TCCCCCTGTACAGATGCCT SEQ ID NO:1211	-5	-31.8	84.3	-26.8	0.2	-4.7
453	AAGAAGGGGAATTTCAGGCA SEQ ID NO:1212	-5	-21.7	63.6	-16	-0.5	-5
727	CATCACAATTTGGATCTTCA SEQ ID NO:1213	-5	-20.5	62.1	-15.5	0	-5.4
958	AAGAACTAATTTGACTCACT SEQ ID NO:1214	-5	-17.4	54.8	-12.4	0	-2.7
1333	AGATTTATCTCTGAGGTGGC SEQ ID NO:1215	-5	-23.1	70.6	-17.4	-0.5	-6.2
1692	CTTCTTTTACAAACCTCCTA SEQ ID NO:1216	-5	-21.9	64.2	-16.9	0	-1.7

position	oligo	kcal/ mol	kcal/ mol	deg C	kcal/ mol	kcal/mol	kcal/mol
		total binding	duplex formation	Tm of Duplex	target structure	Intra- molecular oligo	Inter- molecular oligo
1818	AATACTTCTGAGATATTTCC SEQ ID NO:1217	-5	-19	59.3	-14	0	-3.8
54	TTCATGTTTCCCAGCTGCCT SEQ ID NO:1218	-4.9	-29.1	81.2	-23.7	0	-8.1
142	GTGTTGAGGGCAGTCCACCG SEQ ID NO:1219	-4.9	-29.3	80.9	-23.3	-1	-5.6
146	CACAGTGTGAGGGCAGTCC SEQ ID NO:1220	-4.9	-27.2	79.2	-22.3	0	-5.8
370	GAAGGTGCCGTAGGGACAGT SEQ ID NO:1221	-4.9	-26.9	75.5	-20.4	-1.5	-6.7
454	GAAGAAGGGGAATTTCAGGC SEQ ID NO:1222	-4.9	-21.6	63.7	-16	-0.5	-5
647	CAATCACGAAAATAGAGCCT SEQ ID NO:1223	-4.9	-19.6	57.2	-14.7	0	-3.5
805	CAAACACATACAAGTGTTC SEQ ID NO:1224	-4.9	-18.6	57	-10.9	-2.8	-8.2
959	AAAGAACTAATTTGACTCAC SEQ ID NO:1225	-4.9	-15.8	51.2	-10.9	0	-2.7
1631	CACAGCACTTATGTTAAAT SEQ ID NO:1226	-4.9	-18.7	57.6	-13.8	0	-5.4
1798	TAAGAACATCTAGTACAACA SEQ ID NO:1227	-4.9	-16.8	53.6	-11.9	0	-5.7
1920	AAAGGCCTTCCACACACATT SEQ ID NO:1228	-4.9	-24.5	68.2	-18.1	-1	-10.6
1928	TTACATTCAAAGGCCTTCCA SEQ ID NO:1229	-4.9	-23.6	67.3	-17.2	-1	-10.6
1933	CAGCTTTACATTCAAAGGCC SEQ ID NO:1230	-4.9	-23	66.5	-17.3	-0.6	-6.4
55	CTTCATGTTTCCCAGCTGCC SEQ ID NO:1231	-4.8	-29.1	81.2	-23.8	0	-8.1
166	GCTTTTGCACTCACTGCTGT SEQ ID NO:1232	-4.8	-26.7	77.7	-20	-1.9	-7.4
181	CTTGCAAGCGGGGCTGCTTT SEQ ID NO:1233	-4.8	-30.7	81.8	-19.7	-6.2	-16.3
253	TGTGCGGTAGCAAGTTTCTC SEQ ID NO:1234	-4.8	-24.8	73.3	-18	-2	-5.6
464	CTGAATATTGGAAGAAGGGG SEQ ID NO:1235	-4.8	-19.2	57.9	-14.4	0	-4.6
522	TCTCCAGATGCCATGTCATG SEQ ID NO:1236	-4.8	-25.8	73.9	-20.5	-0.1	-4.3
802	ACACATACAAGTGTTCAGTC SEQ ID NO:1237	-4.8	-20.9	64.6	-14.7	-1.3	-5.4
814	AATATTTAACAACACATAC SEQ ID NO:1238	-4.8	-13.4	46.1	-8.6	0	-3.8
960	CAAAGAATAATTTGACTCA SEQ ID NO:1239	-4.8	-16.3	52	-10.9	-0.3	-3.6
1003	TTAAGTCTTCATTCATATC SEQ ID NO:1240	-4.8	-20.1	62.7	-15.3	0	-2.7
1231	ATCAGCAGCCTTTTGAAATT SEQ ID NO:1241	-4.8	-21.9	64.4	-17.1	0	-4.5
1316	GGCATACGTTAAAGCTATTT SEQ ID NO:1242	-4.8	-20.6	61.2	-15.1	-0.4	-5.1
1319	GGTGGCATACGTTAAAGCTA SEQ ID NO:1243	-4.8	-22.8	66	-17.3	-0.4	-5.4
1720	TTGACATGTTTTCTGCTGAA SEQ ID NO:1244	-4.8	-21	63.6	-14.6	-0.1	-11.4
1727	TTTAAAGTTGACATGTTTTC SEQ ID NO:1245	-4.8	-17.2	55.6	-12.4	0	-7.1
1803	TTTCCTAAGAACATCTAGTA SEQ ID NO:1246	-4.8	-19.2	59.6	-13.9	-0.2	-4.2

position	oligo	kcal/ mol	kcal/ mol	deg C	kcal/ mol	kcal/mol	kcal/mol
		total binding	duplex formation	Tm of Duplex	target structure	Intra- molecular oligo	Inter- molecular oligo
1888	GGCCAACTTCAAGAATAAAA SEQ ID NO:1247	-4.8	-18.1	54.5	-13.3	0	-7
96	AGGTGTGCAGGCACGAGGAG SEQ ID NO:1248	-4.7	-27.2	77.1	-20	-2.5	-10.7
309	TTAGAAGGCTGACACCTCAG SEQ ID NO:1249	-4.7	-23.3	67.9	-17	-1.6	-5.1
832	CAAATCTACATGCATTGAA SEQ ID NO:1250	-4.7	-18.9	56.6	-14.2	0	-6.8
953	CTAATTTGACTCACTGCGGT SEQ ID NO:1251	-4.7	-23	66.6	-18.3	0	-6
982	CAACATTAATGTACATCAA SEQ ID NO:1252	-4.7	-15.5	50.2	-9.5	-0.2	-10.5
1079	CTAGAGAAGCTACTACCAA SEQ ID NO:1253	-4.7	-22.5	64.8	-17.8	0	-5.1
1380	ATTTACCTTCATACACAC SEQ ID NO:1254	-4.7	-20.8	62.4	-16.1	0	-0.9
1462	GATTTCTTTCTCAGAGGA SEQ ID NO:1255	-4.7	-22.4	67.3	-16.2	-1.3	-9.9
1487	TAACCATTTTCAACAAATA SEQ ID NO:1256	-4.7	-15.1	49	-10.4	0.1	-2.7
1573	ATCCAGAGTGACTCCTATA SEQ ID NO:1257	-4.7	-22.6	66.7	-17.9	0.4	-4.7
1743	CTAATTCACCTATATTTTA SEQ ID NO:1258	-4.7	-19.6	59.4	-14.9	0	-2.9
1970	AAACATGTCCTTTTAAACA SEQ ID NO:1259	-4.7	-16.8	52.6	-12.1	0	-6.9
285	GGGCCACACTTCATGCCATC SEQ ID NO:1260	-4.6	-29	79.7	-22.2	-2.2	-7.6
376	CATCCCGAAGGTGCCGTAGG SEQ ID NO:1261	-4.6	-28.9	75.8	-22	-2.3	-6.7
496	GAGAGAAACAAATCTGTTGG SEQ ID NO:1262	-4.6	-17.7	55.1	-11.5	-1.5	-4.5
1250	CAGGTAACCCGGGAACATA SEQ ID NO:1263	-4.6	-25.1	68.1	-18.9	-1.1	-11
1368	ACACACACAAACCACAGTG SEQ ID NO:1264	-4.6	-23.2	64.7	-18	-0.3	-5.2
1437	AATATGGGTAGGGAAGATGA SEQ ID NO:1265	-4.6	-19.8	60	-15.2	0	-2.7
1550	TGGATAATAAATTATCATG SEQ ID NO:1266	-4.6	-14.1	47.8	-6.9	-2.6	-8.1
1551	ATGGATAATAAATTATCAT SEQ ID NO:1267	-4.6	-14.1	47.8	-6.9	-2.6	-8.1
1565	TGACTCCTATAATTATGGAT SEQ ID NO:1268	-4.6	-19.3	59	-14	-0.1	-9
1719	TGACATGTTTTCTGCTGAAA SEQ ID NO:1269	-4.6	-20.2	61.1	-14.1	-1.1	-10.4
1930	CTTTACATTCAAAGGCCTTC SEQ ID NO:1270	-4.6	-21.9	64.7	-16	0	-10.6
1964	GTCCTTTTAAACAAAACCT SEQ ID NO:1271	-4.6	-18.3	55	-13.1	-0.3	-6.2
975	AATGTACATCAAAGTCAAAG SEQ ID NO:1272	-4.5	-15.7	51	-10.6	0	-8.4
1248	GGTAACCCGGGAACATCATC SEQ ID NO:1273	-4.5	-24.8	68.2	-18.8	-0.2	-11
1338	TTCTTAGATTATCTCTGAG SEQ ID NO:1274	-4.5	-18.9	60.9	-13.7	-0.4	-5.6
1523	TGTTTGAAAACCTTATAGAG SEQ ID NO:1275	-4.5	-17.1	54	-12.1	-0.1	-5.7
1620	TGTTTAAATAAGGTCCCTCT SEQ ID NO:1276	-4.5	-21.7	64.2	-17.2	0	-5.2

position	oligo	kcal/ mol	kcal/ mol	deg C	kcal/ mol	kcal/mol	kcal/mol
		total binding	duplex form- ation	Tm of Duplex	target struc- ture	Intra- molecular oligo	Inter- molecular oligo
1668	CTTATTTTCATACCTTAAAT SEQ ID NO:1277	-4.5	-17.3	54.7	-12.8	0	-2.7
262	GCCTGAGACTGTGCGGTAGC SEQ ID NO:1278	-4.4	-28.7	80.3	-23.6	-0.5	-5.4
823	ATGCATTTCGAATATTTAACA SEQ ID NO:1279	-4.4	-17.5	54.2	-12.5	0	-8.4
1247	GTAACCCGGGAACCTACATCA SEQ ID NO:1280	-4.4	-24.3	67	-18.5	-0.2	-10.7
1464	TAGATTTCTTTCCTCAAGAG SEQ ID NO:1281	-4.4	-20.3	62.9	-14.9	-0.9	-6.8
1522	GTTTGAAAACCTTATAGAGT SEQ ID NO:1282	-4.4	-18.3	56.9	-13.9	0	-4.7
1566	GTGACTCCTATAATTATGGA SEQ ID NO:1283	-4.4	-20.5	62	-15.5	0	-8.5
1618	TMTAAATAAGGTCCCTCTGT SEQ ID NO:1284	-4.4	-21.7	64.2	-17.3	0	-4.7
1658	TACCTTAAATTGAAAATTCA SEQ ID NO:1285	-4.4	-15	49	-9.3	-1.2	-5.5
1684	ACAAACCTCCTAAAACTTA SEQ ID NO:1286	-4.4	-17.7	53.6	-13.3	0	-1.2
1685	TACAAACCTCCTAAAACTT SEQ ID NO:1287	-4.4	-17.7	53.6	-13.3	0	-0.9
1724	AAAGTTGACATGTTTCTGTC SEQ ID NO:1288	-4.4	-20	61.6	-15.6	0	-7.1
1969	AACATGTCCTTTTAAAACAA SEQ ID NO:1289	-4.4	-16.8	52.6	-12.4	0	-6.9
95	GGTGTGCAGGCACGAGGAGC SEQ ID NO:1290	-4.3	-29	81.3	-22.2	-2.5	-10.7
255	ACTGTGCGGTAGCAAGTTTC SEQ ID NO:1291	-4.3	-24.6	72.2	-18	-2.3	-6.4
274	CATGCCATCCATGCCTGAGA SEQ ID NO:1292	-4.3	-28.2	76.3	-22.6	-1.2	-5.7
343	GATACCAAACCTCTCACCAA SEQ ID NO:1293	-4.3	-21.6	62.2	-17.3	0	-1.9
387	TCTCTGCAATCCATCCCGAA SEQ ID NO:1294	-4.3	-26.6	71.9	-22.3	0	-4.9
426	GTCCCCCTGTACAGATGCC SEQ ID NO:1295	-4.3	-32.1	86	-27.2	-0.3	-5.2
455	GGAAGAAGGGGAATTCAGG SEQ ID NO:1296	-4.3	-21	62.2	-16	-0.5	-5
826	TACATGCATTTCGAATATTTA SEQ ID NO:1297	-4.3	-17.9	55.5	-13	0	-8.4
1331	ATTATCTCTGAGGTGGCAT SEQ ID NO:1298	-4.3	-23.2	70	-18.9	0	-6.2
1552	TATGGATAATAAATTTATCA SEQ ID NO:1299	-4.3	-13.8	47.3	-6.9	-2.6	-8.1
1660	CATACCTTAAATTGAAAATT SEQ ID NO:1300	-4.3	-14.6	48	-9.2	-1	-3.5
1671	AAACTTATTTTCATACCTTA SEQ ID NO:1301	-4.3	-17.5	55.2	-13.2	0	-1.9
1745	TCCTAATTCCACCTATATTT SEQ ID NO:1302	-4.3	-22.2	64.7	-17.9	0	-2.9
1801	TCCTAAGAACATCTAGTACA SEQ ID NO:1303	-4.3	-19.9	60.7	-15.6	0	-5.7
1897	AACTCTGTTGGCCAACTTCA SEQ ID NO:1304	-4.3	-24.3	69.8	-16.6	-0.5	-15
431	TTCCCGTCCCCCTGTACAG SEQ ID NO:1305	-4.2	-33	85.5	-28.8	0	-4.6
615	CACAGCCGGGATCAGCGTGG SEQ ID NO:1306	-4.2	-29.3	77.8	-23.6	-1.4	-7.7

position	oligo	kcal/ mol	kcal/ mol	deg C	kcal/ mol	kcal/mol	kcal/mol
		total binding	duplex formation	Tm of Duplex	target structure	Intra- molecular oligo	Inter- molecular oligo
804	AAACACATACAAGTGTTTCAG SEQ ID NO:1307	-4.2	-17.9	55.9	-10.9	-2.8	-8.2
821	GCATTTCGAATATTTAACAAA SEQ ID NO:1308	-4.2	-16.1	51	-11.2	0	-8.7
976	TAATGTACATCAAAGTCAAA SEQ ID NO:1309	-4.2	-15.4	50.3	-10.6	0	-8.4
1051	TAAATATTTTATTTCCTCACT SEQ ID NO:1310	-4.2	-18.4	56.6	-13.4	-0.6	-6.2
1199	AAGCTGTTTGTACTCAAAT SEQ ID NO:1311	-4.2	-19.2	59.3	-13.4	-1.6	-9.4
1807	GATATTTTCCTAAGAACATCT SEQ ID NO:1312	-4.2	-18.9	58.3	-14	-0.5	-4
1858	TACTGAAATAATTCTTAAAT SEQ ID NO:1313	-4.2	-12.8	45.1	-7.4	-1.1	-4.2
185	TCCTCTGTCAGCGCGGGCTG SEQ ID NO:1314	-4.1	-31.5	83.7	-24.2	-3.2	-10.9
567	CCGGCAGCATTCTCTTTCAC SEQ ID NO:1315	-4.1	-27.2	76.6	-23.1	0	-5.3
593	TTAACCATTTCCTCATTACG SEQ ID NO:1316	-4.1	-21.4	62.2	-17.3	0	-3
854	GTTACTATACACACACATTT SEQ ID NO:1317	-4.1	-19.3	59.7	-15.2	0	-2
1377	TACCTTCATACACACACAAA SEQ ID NO:1318	-4.1	-19.9	59	-15.8	0	-0.9
1389	TATATAAATATTTACCTTCA SEQ ID NO:1319	-4.1	-15.6	51.1	-11	0	-7.9
1578	TTGAAATCCAGAGTGACTCC SEQ ID NO:1320	-4.1	-22.3	65.2	-17.5	-0.4	-5.5
1833	CTTCACTTCAAATAAAATAC SEQ ID NO:1321	-4.1	-14.5	48.4	-10.4	0	-1.2
180	TTGCAGCGCGGGCTGCTTTT SEQ ID NO:1322	-4	-29.9	80.4	-19.7	-6.2	-16.3
312	CCATTAGAAGGCTGACACCT SEQ ID NO:1323	-4	-24.9	69.7	-20.2	-0.4	-4
457	TTGGAAGAAGGGGAATTTCA SEQ ID NO:1324	-4	-19.9	59.8	-15.2	-0.5	-5
621	AGAAATCACAGCGGGATCA SEQ ID NO:1325	-4	-23.9	66.8	-19.9	0	-6.9
803	AACACATACAAGTGTTTCAGT SEQ ID NO:1326	-4	-19.8	60.9	-13.5	-2.3	-7.4
1137	GGTTGTTTTATTTTGACTTT SEQ ID NO:1327	-4	-19.9	62.7	-15.9	0	-2.8
1510	TATAGAGTCATAGGTTTTTA SEQ ID NO:1328	-4	-18.5	60	-14.5	0	-4.8
1572	TCCAGAGTGAATCCTATAAT SEQ ID NO:1329	-4	-22.6	66.7	-17.9	-0.4	-5.5
1759	TCTTTCAAATATACTCCTAA SEQ ID NO:1330	-4	-18	56.3	-14	0	-2.7
1851	ATAATTCTTAAATAAGTTCT SEQ ID NO:1331	-4	-14.4	49	-10.4	0	-4.9
68	GCAGCAAGACGCTCTTCATG SEQ ID NO:1332	-3.9	-25.1	71.3	-19.9	-1.2	-6.4
74	TGGTCAGCAGCAAGACGCTC SEQ ID NO:1333	-3.9	-26.5	75.3	-21.1	-1.4	-8.5
341	TACCAAACCTCTTCACCAAAA SEQ ID NO:1334	-3.9	-19.6	57.4	-15.7	0	-1
520	TCCAGATGCCATGTCATGCT SEQ ID NO:1335	-3.9	-27.2	76.6	-22.8	-0.2	-4.6
670	TAAATGTTGGCTGTGTGTT SEQ ID NO:1336	-3.9	-20.5	62.2	-16.6	0	-3.9

position	oligo	kcal/ mol	kcal/ mol	deg C	kcal/ mol	kcal/mol	kcal/mol
		total binding	duplex form- ation	Tm of Duplex	target struc- ture	Intra- molecular oligo	Inter- molecular oligo
1054	GGCTAAATATTTTATTTCCC SEQ ID NO:1337	-3.9	-20.5	61.2	-15.8	-0.6	-8.2
1334	TAGATTTATCTCTGAGGTGG SEQ ID NO:1338	-3.9	-21	65.4	-16.2	-0.7	-6.2
1390	ATATATAAATATTTACCTTC SEQ ID NO:1339	-3.9	-14.9	49.8	-11	0	-7.4
1687	TTTACAAACCTCCTAAAAAC SEQ ID NO:1340	-3.9	-16.9	52.2	-13	0	-2.2
141	TGTTGAGGGCAGTCCACCGC SEQ ID NO:1341	-3.8	-29.9	81.8	-25	-1	-5.6
143	AGTGTGAGGGCAGTCCACC SEQ ID NO:1342	-3.8	-28.5	81.8	-23.6	-1	-5.6
278	ACTTCATGCCATCCATGCCT SEQ ID NO:1343	-3.8	-28.6	78.1	-23	-1.8	-5
373	CCCGAAGGTGCCGTAGGGAC SEQ ID NO:1344	-3.8	-29.8	77.4	-23.3	-2.7	-7.9
618	AATCACAGCCGGGATCAGCG SEQ ID NO:1345	-3.8	-26.6	71.7	-21.9	-0.7	-6.9
822	TGCATTGCAATATTTAACAA SEQ ID NO:1346	-3.8	-16.8	52.6	-12.4	0	-8.4
967	TCAAAGTCAAAGAATAATT SEQ ID NO:1347	-3.8	-14.7	48.8	-10.9	0	-3
1180	TTTCCATAAGCTTCAAACAT SEQ ID NO:1348	-3.8	-19.7	59.2	-15.9	0	-6.8
1760	TTCTTTCAAATATACTCCTA SEQ ID NO:1349	-3.8	-18.8	58.5	-15	0	-2.7
1811	CTGAGATATTTCTTAAGAAC SEQ ID NO:1350	-3.8	-18.4	57.1	-14.1	-0.2	-4.6
1859	ATACTGAAATAATTCTTAAA SEQ ID NO:1351	-3.8	-12.8	45.1	-8.3	-0.4	-3.5
1891	GTTGGCCAACTTCAAGAATA SEQ ID NO:1352	-3.8	-21.5	62.9	-14.7	0	-14.2
82	GAGGAGCGTGGTCAGCAGCA SEQ ID NO:1353	-3.7	-28.7	81.5	-24.1	-0.7	-5.9
1119	TTTCCCAAAGCCAAAAA SEQ ID NO:1354	-3.7	-17.5	51.9	-13.8	0	-3.2
1189	TTACTCAAATTTCCATAAGC SEQ ID NO:1355	-3.7	-18.7	57.4	-15	0	-4.5
1314	CATACGTTAAAGCTATTTAT SEQ ID NO:1356	-3.7	-17.3	54.3	-13	-0.3	-5.7
1482	ATTTTCAACAAATAATACTA SEQ ID NO:1357	-3.7	-13.7	46.9	-10	0	-2.5
1571	CCAGAGTGACTCCTATAATT SEQ ID NO:1358	-3.7	-22.3	65.5	-17.9	-0.4	-5.5
1802	TTCTTAAGAACATCTAGTAC SEQ ID NO:1359	-3.7	-19.3	59.8	-15.6	0	-4
1927	TACATTCAAAGGCCTTCCAC SEQ ID NO:1360	-3.7	-23.7	67.5	-18.5	-1	-10.6
277	CTTCATGCCATCCATGCCTG SEQ ID NO:1361	-3.6	-28.4	77.3	-23	-1.8	-5
404	ACTGGCAGTTGCAGTCTCT SEQ ID NO:1362	-3.6	-27.6	81.7	-23	-0.9	-6.6
961	TCAAAGAATAATTTGACTC SEQ ID NO:1363	-3.6	-16	51.9	-10.9	-1.4	-5.4
1057	AAGGGCTAAATATTTTATTT SEQ ID NO:1364	-3.6	-16.6	53.2	-12.3	-0.4	-8.2
1472	AATAATACTAGATTTCTTTC SEQ ID NO:1365	-3.6	-15.5	51.8	-11.9	0	-4.5
1559	CTATAATTATGGATAATAAA SEQ ID NO:1366	-3.6	-12.5	44.5	-8.3	-0.3	-5.9

position	oligo	kcal/ mol	kcal/ mol	deg C	kcal/ mol	kcal/mol	kcal/mol
		total binding	duplex formation	Tm of Duplex	target structure	Intra- molecular oligo	Inter- molecular oligo
1577	TGAAATCCAGAGTGACTCCT SEQ ID NO:1367	-3.6	-23.1	66.8	-18.8	-0.4	-5.5
1728	TTTTAAAGTTGACATGTTTT SEQ ID NO:1368	-3.6	-16.9	54.6	-13.3	0	-7.1
1763	AGATTCTTTCAAATATACTC SEQ ID NO:1369	-3.6	-16.8	54.7	-12.7	-0.1	-3.3
1832	TTCACCTCAAATAAAATACT SEQ ID NO:1370	-3.6	-14.5	48.4	-10.9	0	-1.2
1926	ACATTCAAAGGCTTCCACA SEQ ID NO:1371	-3.6	-24.7	69.1	-19.6	-1	-10.6
1959	TTTAAACAAAACCTAACAG SEQ ID NO:1372	-3.6	-13.6	45.9	-10	0	-4
105	GCGGCCACCGGTGTGCAGG SEQ ID NO:1373	-3.5	-32.5	86.1	-26.4	-2.5	-12.5
286	CGGGCCACACTTCATGCCAT SEQ ID NO:1374	-3.5	-29.4	77.6	-23.7	-2.2	-7.6
291	AGCCCGGGCCACACTTCAT SEQ ID NO:1375	-3.5	-32.7	83.6	-27.3	-1.8	-11.2
346	GCAGATACCAAACCTCTCAC SEQ ID NO:1376	-3.5	-22.1	64.8	-18.6	0	-3.4
966	CAAAGTCAAAGAACTAATTT SEQ ID NO:1377	-3.5	-14.4	48.1	-10.9	0	-3
1918	AGGCCTTCCACACACATTCA SEQ ID NO:1378	-3.5	-27	75.4	-22.4	-1	-7.9
207	CAGCCACAGTCGTCGAGCAC SEQ ID NO:1379	-3.4	-28.2	77.5	-24.2	-0.3	-4.9
252	GTGCGGTAGCAAGTTCTCC SEQ ID NO:1380	-3.4	-26.8	77.3	-21.4	-2	-5.5
356	GACAGTCTTTGCAGATACCA SEQ ID NO:1381	-3.4	-23.9	70.3	-20.5	0.3	-5.2
1082	ATTCTAGAGAAGCTACCTAC SEQ ID NO:1382	-3.4	-21	63.8	-17.6	0	-5.8
1182	AATTTCCATAAGCTTCAAAC SEQ ID NO:1383	-3.4	-18.3	56.1	-14.9	0	-6.8
1486	AACCATTTTCAACAAATAAT SEQ ID NO:1384	-3.4	-15.4	49.5	-11.5	-0.1	-2.7
1555	AATTATGGATAATAAAATTTA SEQ ID NO:1385	-3.4	-12.1	43.7	-8.1	-0.3	-6.1
12	GTCTTTGCTGGTGGGAAGCA SEQ ID NO:1386	-3.3	-26.6	77.2	-21.8	-1.4	-5.7
175	GCGCGGGCTGCTTTTGCACT SEQ ID NO:1387	-3.3	-30.9	82.1	-25.1	-2.5	-11.8
290	GCCCCGGGCCACACTTCATG SEQ ID NO:1388	-3.3	-32.7	83.1	-28.1	-1	-10
308	TAGAAGGCTGACACCTCAGC SEQ ID NO:1389	-3.3	-25	71.8	-17.8	-3.9	-9.4
383	TGCAATCCATCCCGAAGGTG SEQ ID NO:1390	-3.3	-26.4	70.9	-21.8	-1.2	-6.9
649	AACAATCACGAAAATAGAGC SEQ ID NO:1391	-3.3	-16.2	50.9	-12.9	0	-3.5
833	ACAAATCTACATGCATTGCA SEQ ID NO:1392	-3.3	-19.8	58.9	-16.5	0	-6.7
1160	CTTACTTCCTTCAGGGGTTT SEQ ID NO:1393	-3.3	-25.4	75	-21.6	-0.2	-4.7
1183	AAATTTCCATAAGCTTCAAA SEQ ID NO:1394	-3.3	-17.4	53.9	-14.1	0	-6.8
1438	AAATATGGGTAGGGAAGATG SEQ ID NO:1395	-3.3	-18.5	56.8	-15.2	0	-2.7
1473	AAATAATACTAGATTCTTT SEQ ID NO:1396	-3.3	-14.4	48.9	-11.1	0	-4.5

position	oligo	kcal/ mol	kcal/ mol	deg C	kcal/ mol	kcal/mol	kcal/mol
		total binding	duplex formation	Tm of Duplex	target structure	Intra- molecular oligo	Inter- molecular oligo
1558	TATAATTATGGATAATAAAT SEQ ID NO:1397	-3.3	-11.6	42.7	-8.3	0.2	-5.9
1625	ACTTATGTTTAAATAAGGTC SEQ ID NO:1398	-3.3	-16.4	53.5	-11.5	-1.5	-7.1
1995	TTGTTCTTTTTTATTGAACA SEQ ID NO:1399	-3.3	-17.8	57	-12.4	-2.1	-6.7
174	CGCGGGCTGCTTTTGCACCTC SEQ ID NO:1400	-3.2	-29.5	79.6	-24.2	-2.1	-11.3
623	TCAGAAATCACAGCCGGGAT SEQ ID NO:1401	-3.2	-23.9	66.8	-20.7	0	-6.9
897	TCTCCATGTAAGATTACCTA SEQ ID NO:1402	-3.2	-21.8	64.9	-18.6	0	-4.9
1152	CTTCAGGGGTTTTCTGGTTG SEQ ID NO:1403	-3.2	-25	75.1	-20.9	-0.7	-4.2
1232	CATCAGCAGCCTTTTGAAAT SEQ ID NO:1404	-3.2	-22.5	65.2	-19.3	0	-4.1
1372	TCATACACACACAAACCACC SEQ ID NO:1405	-3.2	-22.1	62.6	-18.9	0	-0.9
1403	TTTATTTATAAAAAATATATA SEQ ID NO:1406	-3.2	-9.8	39.4	-5.3	-1.2	-6.5
1560	CCTATAATTATGGATAATAA SEQ ID NO:1407	-3.2	-15.2	49.6	-11.5	-0.1	-6.5
463	TGAATATTGGAAGAAGGGGA SEQ ID NO:1408	-3.1	-18.9	57.3	-15.8	0	-4.6
856	GTGTTACTATACACACACAT SEQ ID NO:1409	-3.1	-20.3	62	-15.6	-1.5	-6.3
948	TTGACTCACTGCGGTCTTCA SEQ ID NO:1410	-3.1	-25.5	73.9	-21.4	-0.9	-6.2
1766	CTAAGATTCTTTCAAATATA SEQ ID NO:1411	-3.1	-15.2	50.6	-11.6	-0.1	-5.6
1796	AGAACATCTAGTACAACAGT SEQ ID NO:1412	-3.1	-19	59.2	-15.9	0	-5.7
56	TCTTCATGTTTCCCAGCTGC SEQ ID NO:1413	-3	-27.5	79.4	-24	0	-8.1
83	CGAGGAGCGTGGTCAGCAGC SEQ ID NO:1414	-3	-28.8	80	-24.8	-0.9	-5.9
225	GCAGCGCACACTCGGCAGCA SEQ ID NO:1415	-3	-31	82.1	-25.7	-2.3	-8.5
371	CGAAGGTGCCGTAGGACAG SEQ ID NO:1416	-3	-26.5	72.1	-21.9	-1.5	-6.7
448	GGGGAATTTTCAGGCATTTTC SEQ ID NO:1417	-3	-23.2	68.8	-20.2	0	-5
509	TGTCATGCTCCGTGAGAGAA SEQ ID NO:1418	-3	-24.5	70.3	-20.4	-1	-6.1
896	CTCCATGTAAGATTACCTAA SEQ ID NO:1419	-3	-20.7	61.4	-17.7	0	-4.9
1140	TCTGGTTGTTTTATTTTGAC SEQ ID NO:1420	-3	-20.1	63.4	-17.1	0	-2
1320	AGGTGGCATACGTTAAAGCT SEQ ID NO:1421	-3	-23.1	66.7	-19.5	-0.3	-5.1
1376	ACCTTCATACACACAAAC SEQ ID NO:1422	-3	-20.4	60	-17.4	0	-0.9
1388	ATATAAATATTTACCTTCAT SEQ ID NO:1423	-3	-15.9	51.7	-12.4	0	-7.9
1831	TCACTTCAAAATAAAATACTT SEQ ID NO:1424	-3	-14.5	48.4	-11.5	0	-1.2
1857	ACTGAAATAATTCTTAAATA SEQ ID NO:1425	-3	-12.8	45.1	-8.6	-1.1	-4.2
1925	CATTCAAAGGCCTTCCACAC SEQ ID NO:1426	-3	-24.7	69.1	-20.2	-1	-10.6

position	oligo	kcal/ mol	kcal/ mol	deg C	kcal/ mol	kcal/mol	kcal/mol
		total binding	duplex formation	Tm of Duplex	target structure	Intra- molecular oligo	Inter- molecular oligo
1957	TAAAACAAAACCTAACAGCT SEQ ID NO:1427	-3	-16.1	50.3	-13.1	0	-4.3
1958	TTAAAACAAAACCTAACAGC SEQ ID NO:1428	-3	-15.3	49	-12.3	0	-2.8
594	TTTAACCATTTTCCTCATTAC SEQ ID NO:1429	-2.9	-20.7	62.1	-17.8	0	-2.4
957	AGAACTAATTTGACTCACTG SEQ ID NO:1430	-2.9	-18.1	56.6	-15.2	0	-2.7
1461	ATTTCTTTTCCTCAAGAGGAT SEQ ID NO:1431	-2.9	-21.8	65.9	-17.3	-1.5	-10.2
1567	AGTGACTCCTATAATTATGG SEQ ID NO:1432	-2.9	-19.9	60.9	-17	0	-6.9
1579	TTTGAAATCCAGAGTGACTC SEQ ID NO:1433	-2.9	-20.4	61.9	-17.5	0	-5.1
1691	TTCTTTTACAAACCTCCTAA SEQ ID NO:1434	-2.9	-20.3	60.4	-17.4	0	-1.9
1808	AGATATTTTCCTAAGAATC SEQ ID NO:1435	-2.9	-18	56.5	-14.4	-0.5	-4
1968	ACATGTCCTTTTAAAACAAA SEQ ID NO:1436	-2.9	-16.8	52.6	-13.9	0	-6.2
57	CTCTTCATGTTTCCCAGCTG SEQ ID NO:1437	-2.8	-26.6	76.9	-23.3	0	-7.8
94	GTGTGCAGGCACGAGGAGCG SEQ ID NO:1438	-2.8	-28.6	78.3	-24	-1.7	-10.7
102	GCCACCAGGTGTGCAGGCAC SEQ ID NO:1439	-2.8	-31.4	85.9	-25.8	-2.1	-13.5
218	ACACTCGGCAGCAGCCACAG SEQ ID NO:1440	-2.8	-28.8	78.4	-22.8	-3.2	-9.8
222	GCGCACACTCGGCAGCAGCC SEQ ID NO:1441	-2.8	-32.3	84.4	-27.2	-2.1	-12
305	AAGGCTGACACCTCAGCCCC SEQ ID NO:1442	-2.8	-30.7	81.2	-21.8	-6.1	-13.4
372	CCGAAGGTGCCGTAGGGACA SEQ ID NO:1443	-2.8	-28.5	75.1	-23.5	-2.2	-8.6
624	CTCAGAAATCACAGCCGGGA SEQ ID NO:1444	-2.8	-24.8	68.6	-22	0	-6.9
898	GTCTCCATGTAAGATTACCT SEQ ID NO:1445	-2.8	-23.3	68.7	-20.5	0	-5.5
965	AAAGTCAAAGAACTAATTTG SEQ ID NO:1446	-2.8	-13.7	46.8	-10.9	0.1	-3.8
1091	CACAATTAAATTCTAGAGAA SEQ ID NO:1447	-2.8	-14.9	49.3	-12.1	0	-5.8
1239	GGAACCTACATCAGCAGCCTT SEQ ID NO:1448	-2.8	-25.2	71.8	-22.4	0	-4.5
1381	TATTTACCTTCATACACACA SEQ ID NO:1449	-2.8	-20.3	61.3	-17.5	0	-1.1
1994	TGTTCTTTTTTATTGAACAA SEQ ID NO:1450	-2.8	-17	54.8	-12.1	-2.1	-6.6
81	AGGAGCGTGGTCAGCAGCAA SEQ ID NO:1451	-2.7	-27.4	77.4	-23.1	-1.5	-5.9
84	ACGAGGAGCGTGGTCAGCAG SEQ ID NO:1452	-2.7	-27.2	76.2	-23.3	-1.1	-6.3
296	ACCTCAGCCCCGGGCCACAC SEQ ID NO:1453	-2.7	-34.8	87	-30.2	-1.8	-11.2
697	GTAATTATGCTATATCTAGA SEQ ID NO:1454	-2.7	-19.5	61.6	-16.8	0	-5.8
1561	TCCTATAATTATGGATAATA SEQ ID NO:1455	-2.7	-16.3	52.4	-12.9	0	-8.7
1619	GTTTAAATAAGGTCCCTCTG SEQ ID NO:1456	-2.7	-21.7	64.2	-19	0	-4.8

position	oligo	kcal/ mol	kcal/ mol	deg C	kcal/ mol	kcal/mol	kcal/mol
		total binding	duplex form- ation	Tm of Duplex	target struc- ture	Intra- molecular oligo	Inter- molecular oligo
1679	CCTCCTAAAACTTATTTTC SEQ ID NO:1457	-2.7	-18.7	56.8	-15	-0.9	-3.3
1815	ACTTCTGAGATATTTCTAA SEQ ID NO:1458	-2.7	-19.9	61.2	-17.2	0	-3.8
98	CCAGGTGTGCAGGCAGAGG SEQ ID NO:1459	-2.6	-29.3	80.1	-24.2	-2.5	-10.7
172	CGGGCTGCTTTTGCACCTAC SEQ ID NO:1460	-2.6	-27.8	77.3	-23.2	-2	-8.4
338	CAAACCTTTCACCAAAAGGA SEQ ID NO:1461	-2.6	-19.5	57.6	-16.9	0	-3.7
671	CTAAAATGTTGGCTGTGTGT SEQ ID NO:1462	-2.6	-21.3	63.8	-18.7	0	-3.9
700	CATGTACTTATGCTATATCT SEQ ID NO:1463	-2.6	-19.9	61.8	-17.3	0	-4.8
946	GACTCACTGCGGTCTTCAGC SEQ ID NO:1464	-2.6	-27.2	78.5	-23.9	-0.4	-6
1581	TTTTTGAAATCCAGAGTGAC SEQ ID NO:1465	-2.6	-19.3	59.2	-16.7	0	-3
1659	ATACCTTAAATTGAAAAATC SEQ ID NO:1466	-2.6	-14.3	47.8	-10.4	-1.2	-3.7
1680	ACCTCCTAAAACTTATTTT SEQ ID NO:1467	-2.6	-18.5	56.1	-15	-0.7	-3.2
1686	TTACAAACCTCCTAAAAACT SEQ ID NO:1468	-2.6	-17.7	53.6	-15.1	0	-1.2
1805	TATTTCTTAAGAACATCTAG SEQ ID NO:1469	-2.6	-18	56.6	-14.9	-0.2	-3.6
1854	GAAATAATTCTTAAATAAGT SEQ ID NO:1470	-2.6	-12.2	44	-8.9	-0.4	-4.9
1952	CAAAACCTAACAGCTTATGC SEQ ID NO:1471	-2.6	-19.9	58.5	-16.6	-0.5	-4.5
64	CAAGACGCTCTTCATGTTTC SEQ ID NO:1472	-2.5	-22.6	67	-19.3	-0.6	-6.1
276	TTCATGCCATCCATGCCCTGA SEQ ID NO:1473	-2.5	-28.1	76.7	-23.8	-1.8	-5
406	TGACTGGCAGTTGCAGGTCT SEQ ID NO:1474	-2.5	-26.9	78.8	-24.4	1.7	-6.1
510	ATGTCATGCTCCGTGAGAGA SEQ ID NO:1475	-2.5	-25.2	72.7	-21.6	-1	-6.1
592	TAACCATTTCTCATTACGG SEQ ID NO:1476	-2.5	-22.5	64.3	-20	0	-3.5
699	ATGTACTTATGCTATATCTA SEQ ID NO:1477	-2.5	-18.9	59.9	-16.4	0	-4.8
1200	AAAGCTGTTTGTACTCAAA SEQ ID NO:1478	-2.5	-18.5	57.4	-14.5	-1.4	-7.8
1471	ATAATACTAGATTCTTTTCC SEQ ID NO:1479	-2.5	-18.2	57.8	-15.7	0	-4.5
1931	GCTTTACATTCAAAGGCCTT SEQ ID NO:1480	-2.5	-23.3	67.4	-19.5	-0.6	-10.4
173	GCGGGCTGCTTTTGCACCTCA SEQ ID NO:1481	-2.4	-29.4	81.1	-24.9	-2.1	-8.4
279	CACTTCATGCCATCCATGCC SEQ ID NO:1482	-2.4	-28.4	77.2	-24.7	-1.2	-4.4
382	GCAATCCATCCGAAGGTGC SEQ ID NO:1483	-2.4	-28.2	74.9	-24.5	-1.2	-5.6
456	TGGAAGAAGGGAATTTCAG SEQ ID NO:1484	-2.4	-19.8	59.6	-16.8	-0.3	-5
824	CATGCATTCTGAATATTTAAC SEQ ID NO:1485	-2.4	-17.5	54.2	-14.6	0	-8.2
857	AGTGTTACTATACACACACA SEQ ID NO:1486	-2.4	-20.3	62.3	-15.6	-2.3	-7.1

position	oligo	kcal/ mol	kcal/ mol	deg C	kcal/ mol	kcal/mol	kcal/mol
		total binding	duplex formation	Tm of Duplex	target structure	Intra- molecular oligo	Inter- molecular oligo
964	AAGTCAAAGAACTAATTTGA SEQ ID NO:1487	-2.4	-15	49.6	-10.9	-1.7	-6
1052	CTAAATATTTTATTTCCCAC SEQ ID NO:1488	-2.4	-18.4	56.6	-15.2	-0.6	-6.2
1402	TTATTTATAAAAAATATATAA SEQ ID NO:1489	-2.4	-9	37.9	-5.3	-1.2	-6.5
1439	TAAATATGGGTAGGGAAGAT SEQ ID NO:1490	-2.4	-18.2	56.3	-15.8	0	-2.7
1444	GATGATAAATATGGGTAGGG SEQ ID NO:1491	-2.4	-18.9	57.9	-16.5	0	-2.7
1887	GCCAACTTCAAGAATAAAAT SEQ ID NO:1492	-2.4	-16.9	52.2	-14.5	0	-3.5
53	TCATGTTTCCCAGCTGCCTC SEQ ID NO:1493	-2.3	-29.4	82.6	-26.6	0	-8.1
99	ACCAGGTGTGCAGGCACGAG SEQ ID NO:1494	-2.3	-28.3	78.1	-24.2	-1.7	-10.7
100	CACCAGGTGTGCAGGCACGA SEQ ID NO:1495	-2.3	-29	78.8	-24.2	-2.5	-10.7
340	ACCAAACCTCTTCACCAAAG SEQ ID NO:1496	-2.3	-19.9	58	-17.6	0	-2.6
386	CTCTGCAATCCATCCCGAAG SEQ ID NO:1497	-2.3	-26.2	70.7	-23.9	0	-4.9
508	GTCATGCTCCGTGAGAGAAA SEQ ID NO:1498	-2.3	-23.8	68.2	-20.4	-1	-6.1
598	TGGATTTAACCATTTCCTCA SEQ ID NO:1499	-2.3	-22.5	65.5	-19.4	-0.6	-4.3
820	CATTCTGAATATTTAACAAAC SEQ ID NO:1500	-2.3	-14.5	47.9	-11.4	0	-9.3
853	TTACTATACACACACATTTA SEQ ID NO:1501	-2.3	-17.8	56.1	-15.5	0	-1.7
947	TGACTCACTGCGGTCTTCAG SEQ ID NO:1502	-2.3	-25.4	73.8	-22.1	-0.9	-6.2
1118	TTCCCAAAGCCAAAAA SEQ ID NO:1503	-2.3	-16.7	50.3	-14.4	0	-3.2
1242	CCGGGAACATACATCAGCAGC SEQ ID NO:1504	-2.3	-26.2	72.1	-23.4	-0.2	-5.6
1398	TTATAAAATATATAAATAT SEQ ID NO:1505	-2.3	-8.1	36.2	-5.3	-0.1	-4.2
1669	ACTTATTTTCATACCTTAA SEQ ID NO:1506	-2.3	-17.5	55.2	-15.2	0	-2.3
1672	AAAACCTATTTTCATACCTT SEQ ID NO:1507	-2.3	-17.1	53.9	-14.1	-0.4	-2.9
1729	ATTTTAAAGTTGACATGTTT SEQ ID NO:1508	-2.3	-16.8	54.3	-14.5	0	-7.1
1860	AATACTGAAATAATCTTAA SEQ ID NO:1509	-2.3	-12.8	45.1	-9.3	-1.1	-4.2
1939	CTTATGCAGCTTTACATTCA SEQ ID NO:1510	-2.3	-21.9	66	-19.6	0	-5.5
49	GTTTCCCAGCTGCCTCCGGC SEQ ID NO:1511	-2.2	-34.1	89.7	-30.5	-1.3	-8.1
287	CCGGGCCACACTTCATGCCA SEQ ID NO:1512	-2.2	-31.4	80.9	-27	-2.2	-7.6
501	TCCGTGAGAGAAACAAATCT SEQ ID NO:1513	-2.2	-19.6	58	-17.4	0	-2.9
599	GTGGATTTAACCATTTCCTC SEQ ID NO:1514	-2.2	-23	67.5	-19.9	-0.8	-4.8
726	ATCACAATTTGGATCTTCAA SEQ ID NO:1515	-2.2	-19.1	58.8	-16.9	0	-5.2
855	TGTTACTATACACACACATT SEQ ID NO:1516	-2.2	-19.2	59.3	-17	0	-2.6

position	oligo	kcal/ mol	kcal/ mol	deg C	kcal/ mol	kcal/mol	kcal/mol
		total binding	duplex formation	Tm of Duplex	target structure	Intra- molecular oligo	Inter- molecular oligo
968	ATCAAAGTCAAAGAACTAAT SEQ ID NO:1517	-2.2	-14.6	48.5	-12.4	0	-3
1309	GTTAAAGCTATTTATGGAAG SEQ ID NO:1518	-2.2	-17	54.3	-14.2	-0.3	-4.6
1315	GCATACGTTAAAGCTATTTA SEQ ID NO:1519	-2.2	-19.1	58.2	-16.4	-0.1	-5.7
1445	GGATGATAAATATGGGTAGG SEQ ID NO:1520	-2.2	-18.9	57.9	-16.7	0	-2.7
1556	TAATTATGGATAATAAATTT SEQ ID NO:1521	-2.2	-12.1	43.7	-9.3	-0.3	-5.2
1799	CTAAGAACATCTAGTACAAC SEQ ID NO:1522	-2.2	-17	54.2	-14.8	0	-5.7
80	GGAGCGTGGTCAGCAGCAAG SEQ ID NO:1523	-2.1	-27.4	77.4	-23.7	-1.5	-5.9
104	CGGCCACCAGGTGTGCAGGC SEQ ID NO:1524	-2.1	-32.5	86.1	-27.8	-2.5	-12.5
650	GAACAATCACGAAATAGAG SEQ ID NO:1525	-2.1	-15	48.6	-12.9	0	-3.5
1078	TAGAGAAGCTACCTACCAAG SEQ ID NO:1526	-2.1	-21.6	63.2	-19.5	0	-5.1
1924	ATTCAAAGGCCCTTCCACACA SEQ ID NO:1527	-2.1	-24.7	69.1	-21.3	-1	-10.1
145	ACAGTGTGAGGGCAGTCCA SEQ ID NO:1528	-2	-27.2	79.2	-24.1	-1	-6.6
171	GGGCTGCTTTTGCCTCACT SEQ ID NO:1529	-2	-27.9	79.7	-23.8	-2.1	-8.4
258	GAGACTGTGCGGTAGCAAGT SEQ ID NO:1530	-2	-25.2	72.8	-20.5	-2.7	-7
514	TGCCATGTCATGCTCCGTGA SEQ ID NO:1531	-2	-28.5	78.2	-25.6	-0.7	-5.7
625	TCTCAGAAATCACAGCCGGG SEQ ID NO:1532	-2	-24.6	68.8	-22.6	0	-6.9
1311	ACGTTAAAGCTATTTATGGA SEQ ID NO:1533	-2	-18.7	57.3	-16.1	-0.3	-5.7
1382	ATATTTACCTTCATACACAC SEQ ID NO:1534	-2	-19.6	60	-17.6	0	-1.8
1399	TTTATAAAAATATATAAATA SEQ ID NO:1535	-2	-8.2	36.4	-5.3	-0.8	-5.5
1404	ATTTATTTATAAAAATATAT SEQ ID NO:1536	-2	-10.1	39.9	-6.8	-1.2	-6
1480	TTTCAACAAATAATACTAGA SEQ ID NO:1537	-2	-14.2	47.9	-12.2	0	-4.5
1956	AAAACAAAACCTAACAGCTT SEQ ID NO:1538	-2	-16.5	51.1	-14.5	0	-4.5
497	TGAGAGAAACAAATCTGTTG SEQ ID NO:1539	-1.9	-16.5	52.6	-13	-1.5	-4.5
513	GCCATGTCATGCTCCGTGAG SEQ ID NO:1540	-1.9	-28.5	78.7	-25.6	-0.9	-6.6
614	ACAGCCGGGATCAGCGTGGA SEQ ID NO:1541	-1.9	-29.2	78.1	-26.4	-0.7	-6.9
672	CCTAAAAATGTTGGCTGTGTG SEQ ID NO:1542	-1.9	-22.1	64.3	-20.2	0	-3.9
981	AACATTAATGTACATCAAAG SEQ ID NO:1543	-1.9	-14.8	49	-11.6	-0.2	-10.5
1852	AATAATTCTTAAATAAGTTC SEQ ID NO:1544	-1.9	-12.8	45.5	-10.9	0	-4.9
1893	CTGTTGGCCAACTCAAGAA SEQ ID NO:1545	-1.9	-22.7	65.2	-17.4	-0.5	-15
1951	AAAACCTAACAGCTTATGCA SEQ ID NO:1546	-1.9	-19.9	58.5	-16.4	-1.6	-5.7

position	oligo	kcal/ mol	kcal/ mol	deg C	kcal/ mol	kcal/mol	kcal/mol
		total binding	duplex form- ation	Tm of Duplex	target struc- ture	Intra- molecular oligo	Inter- molecular oligo
219	CACACTCGGCAGCAGCCACA SEQ ID NO:1547	-1.8	-29.5	79	-24.5	-3.2	-9.8
428	CCGTCCCCCTGTCACAGATG SEQ ID NO:1548	-1.8	-31.1	81.2	-28.7	-0.3	-5.2
616	TCACAGCCGGGATCAGCGTG SEQ ID NO:1549	-1.8	-28.5	77	-25.1	-1.6	-8.1
806	ACAAACACATACAAGTGTTT SEQ ID NO:1550	-1.8	-18.1	56.3	-13.5	-2.8	-8.2
819	ATTCGAATATTTAACAACA SEQ ID NO:1551	-1.8	-14.5	47.9	-12	0	-9.1
1050	AAATATTTTATTTCCCACTC SEQ ID NO:1552	-1.8	-19.1	58.4	-16.7	-0.3	-5.8
1310	CGTTAAAGCTATTTATGGAA SEQ ID NO:1553	-1.8	-17.8	54.9	-15.4	-0.3	-5.1
1953	ACAAAACCTAACAGCTTATG SEQ ID NO:1554	-1.8	-18.3	55.4	-16.5	0	-4.5
85	CACGAGGAGCGTGGTCAGCA SEQ ID NO:1555	-1.7	-27.9	76.9	-23.4	-2.8	-9.7
101	CCACCAGGTGTGCAGGCACG SEQ ID NO:1556	-1.7	-30.4	80.9	-26.2	-2.5	-11.6
311	CATTAGAAGGCTGACACCTC SEQ ID NO:1557	-1.7	-23.3	67.7	-20.8	-0.6	-4.3
375	ATCCCGAAGGTGCCGTAGGG SEQ ID NO:1558	-1.7	-29.4	77.2	-25	-2.7	-7.9
1156	CTTCCTTCAGGGGTTTCTG SEQ ID NO:1559	-1.7	-25.9	76.6	-23.6	-0.3	-5.7
1159	TTACTTCCTTCAGGGGTTTT SEQ ID NO:1560	-1.7	-24.6	73.3	-22.4	-0.2	-4.7
1287	TATGTGTTTCCTATGCCCCA SEQ ID NO:1561	-1.7	-27.8	76.9	-26.1	0	-3
1401	TATTTATAAAAAATATATAAA SEQ ID NO:1562	-1.7	-8.2	36.4	-5.3	-1.1	-6.5
1474	CAAATAATACTAGATTTCCTT SEQ ID NO:1563	-1.7	-15	49.9	-13.3	0	-4.5
1568	GAGTGACTCCTATAATTATG SEQ ID NO:1564	-1.7	-19.3	59.6	-17.6	0	-5.9
1874	ATAAAATACAGGTAAATACT SEQ ID NO:1565	-1.7	-13.7	46.7	-12	0	-3.8
427	CGTCCCCCTGTCACAGATGC SEQ ID NO:1566	-1.6	-30.9	82.1	-28.7	-0.3	-5.2
1072	AGCTACCTACCAAGGAAGGG SEQ ID NO:1567	-1.6	-24.9	69.6	-22.4	-0.7	-8.8
1083	AATTCTAGAGAAGCTACCTA SEQ ID NO:1568	-1.6	-20.1	61.2	-18.5	0	-5.8
1299	TTTATGGAAGTGTATGTGTT SEQ ID NO:1569	-1.6	-19.6	61.6	-18	0	-1.3
1383	AATATTACCTTCATACACA SEQ ID NO:1570	-1.6	-18.7	57.5	-17.1	0	-3.8
1397	TATAAAAATATATAAATATT SEQ ID NO:1571	-1.6	-8.1	36.2	-5.3	-1.1	-4.4
1580	TTTTGAAATCCAGAGTGACT SEQ ID NO:1572	-1.6	-20.1	60.8	-18.5	0	-4.2
1742	TAATTCCACCTATATTTTAA SEQ ID NO:1573	-1.6	-18	55.7	-16.4	0	-2.9
256	GACTGTGCGGTAGCAAGTTT SEQ ID NO:1574	-1.5	-24.8	71.9	-20.4	-2.9	-7.2
259	TGAGACTGTGCGGTAGCAAG SEQ ID NO:1575	-1.5	-24	69.3	-20.5	-2	-7
407	CTGACTGGCAGTTGCAGGTC SEQ ID NO:1576	-1.5	-26.9	78.8	-24.4	-0.9	-7.6

position	oligo	kcal/ mol	kcal/ mol	deg C	kcal/ mol	kcal/mol	kcal/mol
		total binding	duplex formation	Tm of Duplex	target structure	Intra- molecular oligo	Inter- molecular oligo
519	CCAGATGCCATGTCATGCTC SEQ ID NO:1577	-1.5	-27.2	76.6	-25.2	-0.2	-4.6
620	GAAATCACAGCCGGGATCAG SEQ ID NO:1578	-1.5	-23.9	66.8	-22.4	0	-6.9
659	CTGTGTGTTGAACAATCAG SEQ ID NO:1579	-1.5	-20.8	61.5	-17.4	-1.9	-8.7
1058	GAAGGGCTAAATATTTTAT SEQ ID NO:1580	-1.5	-17.1	54.2	-15.6	0	-6.2
1158	TACTTCCTTCAGGGGTTTC SEQ ID NO:1581	-1.5	-24.9	74.8	-23.4	0.4	-4.1
1295	TGGAAGTGTATGTGTTTCCT SEQ ID NO:1582	-1.5	-23.1	69.5	-19.9	-1.7	-5.4
1300	ATTTATGGAAGTGTATGTGT SEQ ID NO:1583	-1.5	-19.5	61.2	-18	0	-1.8
1313	ATACGTTAAAGCTATTTATG SEQ ID NO:1584	-1.5	-16.6	53	-14.5	-0.3	-5.7
1681	AACCTCCTAAAACTTATTT SEQ ID NO:1585	-1.5	-17.7	54.1	-16.2	0	-2.2
1814	CTTCTGAGATATTTCTAAG SEQ ID NO:1586	-1.5	-19.7	60.9	-18.2	0	-3.3
1947	CCTAACAGCTTATGCAGCTT SEQ ID NO:1587	-1.5	-24.6	70.5	-21.1	-2	-6.9
1948	ACCTAACAGCTTATGCAGCT SEQ ID NO:1588	-1.5	-24.7	70.7	-21.3	-1.9	-6.9
698	TGTACTTATGCTATATCTAG SEQ ID NO:1589	-1.4	-18.9	60.1	-17.5	0	-4.8
978	ATTAATGTACATCAAAGTCA SEQ ID NO:1590	-1.4	-16.9	54.1	-14.9	0	-8.4
1073	AAGCTACCTACCAAGGAAG SEQ ID NO:1591	-1.4	-23	65.1	-20	-1.6	-9.2
1288	GTATGTGTTTCTATGCCCC SEQ ID NO:1592	-1.4	-28.3	79.3	-26.9	0	-3
1384	AAATATTTACCTTCATACAC SEQ ID NO:1593	-1.4	-17.3	54.5	-15.9	0	-5.8
1570	CAGAGTGACTCCTATAATTA SEQ ID NO:1594	-1.4	-20	61.2	-17.9	-0.4	-5.5
1749	ATACTCCTAATTCACCTAT SEQ ID NO:1595	-1.4	-23.1	66.4	-21.7	0	-2.9
1751	ATATACTCCTAATTCACCT SEQ ID NO:1596	-1.4	-23.1	66.4	-21.7	0	-2.9
1825	CAAATAAAATACTTCTGAGA SEQ ID NO:1597	-1.4	-14.3	47.9	-12.9	0	-2.8
1861	AAATACTGAAATAATTCTTA SEQ ID NO:1598	-1.4	-12.8	45.1	-10.2	-1.1	-4.2
1892	TGTTGGCCAACCTCAAGAAT SEQ ID NO:1599	-1.4	-21.8	63.4	-17	-0.5	-15
1938	TTATGCAGCTTTACATTCAA SEQ ID NO:1600	-1.4	-20.3	61.8	-18.9	0	-5.5
86	GCACGAGGAGCGTGGTCAGC SEQ ID NO:1601	-1.3	-29	80.2	-24.2	-3.5	-9.7
167	TGCTTTTGCACCTCACTGCTG SEQ ID NO:1602	-1.3	-25.5	73.9	-22.2	-2	-7.5
1456	TTTCCTCAAGAGGATGATAA SEQ ID NO:1603	-1.3	-19.9	60.3	-17	-1.5	-10.2
1460	TTTCCTTCCTCAAGAGGATG SEQ ID NO:1604	-1.3	-21.8	65.8	-18.9	-1.5	-10.2
1470	TAATACTAGATTTCTTTCCT SEQ ID NO:1605	-1.3	-19.1	59.8	-17.8	0	-4
1725	TAAAGTTGACATGTTTCTG SEQ ID NO:1606	-1.3	-17.9	56.9	-16.6	0	-7.1

position	oligo	kcal/ mol	kcal/ mol	deg C	kcal/ mol	kcal/mol	kcal/mol
		total binding	duplex formation	Tm of Duplex	target structure	Intra- molecular oligo	Inter- molecular oligo
499	CGTGAGAGAAACAAATCTGT SEQ ID NO:1607	-1.2	-18.4	55.9	-16.6	-0.3	-3.3
834	AACAAATCTACATGCATTTCG SEQ ID NO:1608	-1.2	-18.5	55.9	-17.3	0	-6.7
1067	CCTACCAAGGAAGGGCTAAA SEQ ID NO:1609	-1.2	-23.3	64.7	-21.2	-0.7	-5.1
1071	GCTACCTACCAAGGAAGGGC SEQ ID NO:1610	-1.2	-26.7	73.4	-23.9	-1.6	-6.1
1085	TAAATTCTAGAGAAGCTACC SEQ ID NO:1611	-1.2	-18.5	57.3	-17.3	0	-5.6
1157	ACTTCCTTCAGGGGTTTCT SEQ ID NO:1612	-1.2	-26.1	77.5	-24.4	-0.2	-5.7
1161	TCTTACTTCCTTCAGGGGTT SEQ ID NO:1613	-1.2	-25.7	76.5	-24	-0.2	-4.7
1178	TCCATAAGCTTCAAACATCT SEQ ID NO:1614	-1.2	-20.8	61.7	-19.6	0	-6.5
1179	TTCCATAAGCTTCAAACATC SEQ ID NO:1615	-1.2	-20	60.2	-18.8	0	-6.8
1308	TTAAAGCTATTTATGGAAGT SEQ ID NO:1616	-1.2	-17	54.3	-15.2	-0.3	-5.1
1312	TACGTTAAAGCTATTTATGG SEQ ID NO:1617	-1.2	-17.8	55.5	-16.6	0	-5.7
1387	TATAAATATTTACCTTCATA SEQ ID NO:1618	-1.2	-15.6	51.1	-13.9	0	-7.9
1856	CTGAAATAATTCTTAAATAA SEQ ID NO:1619	-1.2	-11.9	43.3	-9.5	-1.1	-4.2
1940	GCTTATGCAGCTTTACATTC SEQ ID NO:1620	-1.2	-23	69.2	-20.6	-1.1	-6.1
498	GTGAGAGAAACAAATCTGTT SEQ ID NO:1621	-1.1	-17.7	55.5	-15.2	-1.3	-4.3
654	TGTTGAACAATCACGAAAAAT SEQ ID NO:1622	-1.1	-16	50.4	-14.1	-0.6	-4.4
1241	CGGGAACCTACATCAGCAGCC SEQ ID NO:1623	-1.1	-26.2	72.1	-24.6	-0.2	-4.7
1396	ATAAAAAATATATAAATATTT SEQ ID NO:1624	-1.1	-8.5	36.9	-5.3	-2.1	-6
1674	TAAAAAATTTATTTTCATACC SEQ ID NO:1625	-1.1	-15.1	49.6	-13	-0.9	-3.3
1937	TATGCAGCTTTACATTCAAA SEQ ID NO:1626	-1.1	-19.5	59.4	-18.4	0	-5.5
103	GGCCACCAGGTGTGCAGGCA SEQ ID NO:1627	-1	-32.4	87.9	-28.5	-2.9	-12.5
179	TGCAGCGCGGCTGCTTTTG SEQ ID NO:1628	-1	-29.8	79.8	-22.6	-6.2	-16.3
339	CCAAACTCTTCACCAAAAGG SEQ ID NO:1629	-1	-20.9	59.8	-19.9	0	-3.6
511	CATGTCATGCTCCGTGAGAG SEQ ID NO:1630	-1	-25.3	72.4	-23.3	-0.9	-6.5
711	TTCAAAAATTACATGTACTT SEQ ID NO:1631	-1	-15.2	50	-13.7	0	-7.7
852	TACTATACACACACATTTAA SEQ ID NO:1632	-1	-17	53.9	-16	0	-2.2
1752	AATATACTCCTAATTCCACC SEQ ID NO:1633	-1	-21.5	62.5	-20.5	0	-2.9
313	CCCATTAGAAGGCTGACACC SEQ ID NO:1634	-0.9	-26	71.3	-25.1	0	-3.7
653	GTTGAACAATCACGAAAATA SEQ ID NO:1635	-0.9	-15.7	49.9	-14	-0.6	-4.4
979	CATTAATGTACATCAAAGTC SEQ ID NO:1636	-0.9	-16.9	54.1	-15.5	0	-7.9

position	oligo	kcal/ mol	kcal/ mol	deg C	kcal/ mol	kcal/mol	kcal/mol
		total binding	duplex formation	Tm of Duplex	target structure	Intra- molecular oligo	Inter- molecular oligo
1096	AAAAGCACAATTAAATCTA SEQ ID NO:1637	-0.9	-14.1	47.3	-13.2	0	-4.1
1286	ATGTGTTTCCATATGCCCCAG SEQ ID NO:1638	-0.9	-28.1	77.8	-27.2	0	-3
1293	GAAGTGATGTGTTTCCCTAT SEQ ID NO:1639	-0.9	-21.6	66.3	-20.7	0	-2.2
1748	TACTCCTAATCCACCTATA SEQ ID NO:1640	-0.9	-22.8	65.9	-21.9	0	-2.9
1750	TATACTCCTAATCCACCTA SEQ ID NO:1641	-0.9	-22.8	65.9	-21.9	0	-2.9
1919	AAGGCCTTCCACACACATTC SEQ ID NO:1642	-0.9	-25.6	71.9	-23.4	-1	-9.8
374	TCCCGAAGGTGCCCGTAGGGA SEQ ID NO:1643	-0.8	-30	78.4	-26.5	-2.7	-9.3
405	GACTGGCAGTGCAGGTCTC SEQ ID NO:1644	-0.8	-27.3	81	-25.5	-0.9	-7.7
1521	TTTGAAAACCTTATAGAGTC SEQ ID NO:1645	-0.8	-17.5	55.3	-16.7	0	-3.5
1997	TCTTGTTCTTTTATTGAA SEQ ID NO:1646	-0.8	-18.2	58.6	-17.4	0	-3.3
357	GGACAGTCTTGCAGATACC SEQ ID NO:1647	-0.7	-24.4	71.8	-23.2	-0.2	-6
1294	GGAAGTGTATGTGTTTCCTA SEQ ID NO:1648	-0.7	-22.8	69.1	-21	-1	-4.6
1457	CTTTCCTCAAGAGGATGATA SEQ ID NO:1649	-0.7	-21.5	64.3	-19.2	-1.5	-10.2
1557	ATAATTATGGATAATAAATT SEQ ID NO:1650	-0.7	-12	43.5	-10.7	-0.3	-5.3
1569	AGAGTGACTCCTATAATTAT SEQ ID NO:1651	-0.7	-19.3	59.9	-17.9	-0.4	-5.9
288	CCCGGGCCACACTTCATGCC SEQ ID NO:1652	-0.6	-32.7	83.1	-30.9	-1.1	-9.2
559	ATTCTCTTTTCAACTTCTT SEQ ID NO:1653	-0.6	-20.8	64.5	-20.2	0	-1
710	TCAAAAATTACATGTACTTA SEQ ID NO:1654	-0.6	-14.8	49.2	-13.7	0	-7.7
1097	AAAAGCACAATTAAATTCT SEQ ID NO:1655	-0.6	-13.7	46.4	-13.1	0	-3.3
1323	CTGAGGTGGCATAACGTAAA SEQ ID NO:1656	-0.6	-21.9	63.6	-21.3	0.5	-4.8
1385	TAAATATTTACCTTCATACA SEQ ID NO:1657	-0.6	-16.8	53.4	-16.2	0	-7
1730	TATTTTAAAGTTGACATGTT SEQ ID NO:1658	-0.6	-16.4	53.4	-15.8	0	-7.1
1747	ACTCCTAATTCACCTATAT SEQ ID NO:1659	-0.6	-23.1	66.4	-22.5	0	-2.9
1770	TGTGCTAAGATTCTTTCAAA SEQ ID NO:1660	-0.6	-18.8	58.4	-17.7	-0.1	-5.6
1819	AAATACTCTGAGATATTTT SEQ ID NO:1661	-0.6	-16.3	53.4	-14.8	-0.7	-4.6
1826	TCAAATAAAATACTTCTGAG SEQ ID NO:1662	-0.6	-14.1	47.7	-13.5	0	-2.8
1828	CTTCAAATAAAATACTTCTG SEQ ID NO:1663	-0.6	-14.5	48.5	-13.9	0	-1.5
1936	ATGCAGCTTTACATTCAAAG SEQ ID NO:1664	-0.6	-19.8	60.2	-18.7	-0.2	-5.8
168	CTGCTTTTGCACCTCACTGCT SEQ ID NO:1665	-0.5	-26.4	76.1	-23.8	-2.1	-7.6
184	CCTCTTGCGCGCGGCTGCG SEQ ID NO:1666	-0.5	-32.9	86.1	-27	-5.4	-15.3

position	oligo	kcal/ mol	kcal/ mol	deg C	kcal/ mol	kcal/mol	kcal/mol
		total binding	duplex formation	Tm of Duplex	target structure	Intra- molecular oligo	Inter- molecular oligo
307	AGAAGGCTGACACCTCAGCC SEQ ID NO:1667	-0.5	-27.3	76	-21.1	-5.7	-13
408	CCTGACTGGCAGTTGCAGGT SEQ ID NO:1668	-0.5	-28.5	80.6	-26.1	-1.9	-9
613	CAGCCGGGATCAGCGTGGAT SEQ ID NO:1669	-0.5	-29	77.5	-27.6	-0.7	-6.9
980	ACATTAATGTACATCAAAGT SEQ ID NO:1670	-0.5	-16.7	53.4	-15.3	0	-9.6
1070	CTACCTACCAAGGAAGGGCT SEQ ID NO:1671	-0.5	-25.8	71.2	-23.7	-1.6	-6.6
1090	ACAATTAAATTTCTAGAGAAG SEQ ID NO:1672	-0.5	-14.2	48.1	-13.7	0	-5.8
1240	GGGAACCTACATCAGCAGCCT SEQ ID NO:1673	-0.5	-26.3	74	-25.3	-0.2	-4.7
1296	ATGGAAGTGTATGTGTTTCC SEQ ID NO:1674	-0.5	-22.2	67.4	-20.7	-0.9	-4.4
1876	GAATAAAATACAGGTAAATA SEQ ID NO:1675	-0.5	-12.5	44.3	-12	0	-3.6
93	TGTGCAGGCACGAGGAGCGT SEQ ID NO:1676	-0.4	-28.6	78.3	-26.6	-1.3	-10.7
846	ACACACACATTTAACAATC SEQ ID NO:1677	-0.4	-16.7	52.7	-16.3	0	-2.7
1768	TGCTAAGATTCTTTCAAATA SEQ ID NO:1678	-0.4	-17.3	55	-16.4	-0.1	-5.6
1932	AGCTTTACATTCAAAGGCCT SEQ ID NO:1679	-0.4	-23.2	67.3	-22	-0.6	-8.4
1946	CTAACAGCTTATGCAGCTTT SEQ ID NO:1680	-0.4	-22.7	67.1	-20.5	-1.8	-6.9
1949	AACCTAACAGCTTATGCAGC SEQ ID NO:1681	-0.4	-23.1	66.5	-21.1	-1.6	-5.7
65	GCAAGACGCTCTTCATGTTT SEQ ID NO:1682	-0.3	-24	69.7	-22.9	-0.6	-6.1
558	TTCTCTTTTACAACTTCTTC SEQ ID NO:1683	-0.3	-21.2	66.1	-20.9	0	-0.7
610	CCGGGATCAGCGTGGATTTA SEQ ID NO:1684	-0.3	-26.4	72.3	-26.1	0	-7
712	CTTCAAAAATTACATGTACT SEQ ID NO:1685	-0.3	-16	51.6	-15.2	0	-7.7
723	ACAATTTGGATCTTCAAAAA SEQ ID NO:1686	-0.3	-15.9	51	-14.2	-1.3	-6.3
506	CATGCTCCGTGAGAGAAACA SEQ ID NO:1687	-0.2	-23.1	65.3	-21.8	-1	-6.1
701	ACATGTACTTATGCTATATC SEQ ID NO:1688	-0.2	-19.2	60.3	-19	0	-6.1
825	ACATGCATTCTGAATATTTAA SEQ ID NO:1689	-0.2	-17.5	54.2	-16.7	0	-8.4
845	CACACACATTTAACAATCT SEQ ID NO:1690	-0.2	-17.4	54	-17.2	0	-2.7
1459	TTCTTTCCTCAAGAGGATGA SEQ ID NO:1691	-0.2	-22.3	66.8	-20.7	-1.2	-9.9
1467	TACTAGATTTCTTTCTCAA SEQ ID NO:1692	-0.2	-20.5	63.1	-20.3	0	-4.5
1673	AAAAACTTATTTTCATACCT SEQ ID NO:1693	-0.2	-16.3	52	-15.1	-0.9	-3.3
1769	GTGCTAAGATTCTTTCAAAT SEQ ID NO:1694	-0.2	-18.8	58.5	-18.1	-0.1	-5.5
1853	AAATAATTCTTAAATAAGTT SEQ ID NO:1695	-0.2	-11.7	43.1	-11.5	0	-4.9
655	GTGTTGAACAATCACGAAAA SEQ ID NO:1696	-0.1	-17.2	52.9	-16.3	-0.6	-8.1

position	oligo	kcal/ mol	kcal/ mol	deg C	kcal/ mol	kcal/mol	kcal/mol
		total binding	duplex form- ation	Tm of Duplex	target struc- ture	Intra- molecular oligo	Inter- molecular oligo
722	CAATTTGGATCTTCAAAAAT SEQ ID NO:1697	-0.1	-15.7	50.6	-14.2	-1.3	-6.3
962	GTCAAAGAATAATTTGACT SEQ ID NO:1698	-0.1	-16.8	53.4	-13.3	-3.4	-9.4
969	CATCAAAGTCAAAGAACTAA SEQ ID NO:1699	-0.1	-15.3	49.8	-15.2	0	-3
1117	TCCCAAAGCCAAAAAAAAAA SEQ ID NO:1700	-0.1	-15.9	48.7	-15.8	0	-3.2
1324	TCTGAGGTGGCATACGTAA SEQ ID NO:1701	-0.1	-23	67.2	-22.3	-0.3	-4.8
1875	AATAAAATACAGGTAAATAC SEQ ID NO:1702	-0.1	-12.1	43.5	-12	0	-3.6
1935	TGCAGCTTTACATCAAAGG SEQ ID NO:1703	-0.1	-21	62.7	-20.9	0.1	-7.6
1292	AAGTGTATGTGTTTCCTATG SEQ ID NO:1704	0	-21	64.7	-21	0	-1.7
1682	AAACCTCCTAAAACTTATT SEQ ID NO:1705	0	-16.9	52.2	-16.9	0	-1.3
1827	TTCAAATAAAATACTTCTGA SEQ ID NO:1706	0	-14.2	47.9	-14.2	0	-2.5
512	CCATGTCATGCTCCGTGAGA SEQ ID NO:1707	0.1	-27.3	75.7	-26.7	-0.4	-6.6
1094	AAGCACAATTAATTTCTAGA SEQ ID NO:1708	0.1	-16.1	51.8	-16.2	0	-5.4
1162	ATCTTACTTCTTCAGGGGT SEQ ID NO:1709	0.1	-25.6	76	-25.2	-0.2	-4.7
1307	TAAAGCTATTTATGGAAGTG SEQ ID NO:1710	0.1	-16.9	54	-17	0	-5.1
1481	TTTTCAACAAATAATACTAG SEQ ID NO:1711	0.1	-13.7	47	-13.8	0	-4
1923	TTCAAAGGCCTTCCACACAC SEQ ID NO:1712	0.1	-24.9	69.7	-23.5	-1	-10.6
1967	CATGTCCTTTTAAACAAAA SEQ ID NO:1713	0.1	-15.9	50.5	-15.5	-0.1	-6.2
89	CAGGCACGAGGAGCGTGGTC SEQ ID NO:1714	0.2	-28.4	78.4	-25.1	-3.5	-9
257	AGACTGTGCGGTAGCAAGTT SEQ ID NO:1715	0.2	-24.7	71.8	-22	-2.9	-7.2
652	TTGAACAATCACGAAAATAG SEQ ID NO:1716	0.2	-14.5	47.6	-13.9	-0.6	-4.4
1068	ACCTACCAAGGAAGGGCTAA SEQ ID NO:1717	0.2	-24.2	67.3	-22.8	-1.6	-6.6
1084	AAATTCTAGAGAAGCTACCT SEQ ID NO:1718	0.2	-19.7	59.7	-19.9	0	-5.8
1169	TTCAAACATCTTACTTCCTT SEQ ID NO:1719	0.2	-20.4	61.8	-20.6	0	-1
1177	CCATAAGCTTCAAACATCTT SEQ ID NO:1720	0.2	-20.5	60.7	-20.7	0	-6.8
1392	AAATATATAAATATTTACCT SEQ ID NO:1721	0.2	-13	45.4	-11.4	-1.8	-7.9
1476	AACAAATAATACTAGATTTT SEQ ID NO:1722	0.2	-13.5	46.7	-13.7	0	-4.5
1741	AATTCACCTATATTTTAAA SEQ ID NO:1723	0.2	-17.6	54.5	-17.8	0	-4.2
1877	AGAATAAAATACAGGTAAAT SEQ ID NO:1724	0.2	-12.8	44.8	-13	0	-3.6
807	AACAAACACATACAAGTGTT SEQ ID NO:1725	0.3	-17	53.3	-14.7	-2.6	-8
1053	GCTAAATATTTTATTTCCCA SEQ ID NO:1726	0.3	-20	59.9	-19.5	-0.6	-6.2

position	oligo	kcal/ mol	kcal/ mol	deg C	kcal/ mol	kcal/mol	kcal/mol
		total binding	duplex form- ation	Tm of Duplex	target struc- ture	Intra- molecular oligo	Inter- molecular oligo
1059	GGAAGGGCTAAATATTTTAT SEQ ID NO:1727	0.3	-18.2	56.3	-18.5	0	-6.6
1074	GAAGCTACCTACCAAGGAAG SEQ ID NO:1728	0.3	-22.4	63.9	-21.1	-1.6	-9.2
1391	AATATATAAATATTACCTT SEQ ID NO:1729	0.3	-13.8	47.1	-13.2	-0.8	-7.9
1455	TTCCCTCAAGAGGATGATAAA SEQ ID NO:1730	0.3	-19.1	58.1	-17.8	-1.5	-10.2
1468	ATACTAGATTTCTTTCCTCA SEQ ID NO:1731	0.3	-21.2	65.3	-21.5	0	-4.5
88	AGGCACGAGGAGCGTGGTCA SEQ ID NO:1732	0.4	-28.4	78.4	-25.3	-3.5	-9.2
221	CGCACACTCGGCAGCAGCCA SEQ ID NO:1733	0.4	-31.2	81.2	-28.4	-3.2	-9.8
224	CAGCGCACACTCGGCAGCAG SEQ ID NO:1734	0.4	-29.2	78.2	-27.3	-2.3	-8.5
861	CTTCAGTGTACTATACACA SEQ ID NO:1735	0.4	-20.6	63.8	-19.4	-1.5	-5.7
977	TTAATGTACATCAAAGTCAA SEQ ID NO:1736	0.4	-16.2	52.3	-16	0	-8.4
1069	TACCTACCAAGGAAGGGCTA SEQ ID NO:1737	0.4	-24.6	68.8	-23.4	-1.6	-6.6
1173	AAGCTTCAAACATCTTACTT SEQ ID NO:1738	0.4	-19	58.5	-19.4	0	-6.2
1322	TGAGGTGGCATAACGTAAAG SEQ ID NO:1739	0.4	-21	62	-20.8	-0.3	-4.8
1475	ACAAATAATACTAGATTTCT SEQ ID NO:1740	0.4	-15.1	50.1	-15.5	0	-4.5
1813	TTCTGAGATATTTCTAAGA SEQ ID NO:1741	0.4	-19.4	60.3	-19.8	0	-4.6
176	AGCGCGGGCTGCTTTGCAC SEQ ID NO:1742	0.5	-30	80.6	-27.2	-3.3	-12.5
178	GCAGCGGGGGCTGCTTTGTC SEQ ID NO:1743	0.5	-31.6	84.2	-26.6	-5.5	-15.5
418	GTCACAGATGCCTGACTGGC SEQ ID NO:1744	0.5	-27.2	77.4	-25.6	-2.1	-8.7
505	ATGCTCCGTGAGAGAAACAA SEQ ID NO:1745	0.5	-21.7	62.2	-21.1	-1	-6.1
507	TCATGCTCCGTGAGAGAAAC SEQ ID NO:1746	0.5	-22.8	65.6	-22.6	-0.4	-5.9
891	TGTAAGATTACCTAAATTGC SEQ ID NO:1747	0.5	-17.9	55.6	-18.4	0	-4.9
892	ATGTAAGATTACCTAAATTG SEQ ID NO:1748	0.5	-16.1	51.8	-16.6	0	-4.9
1405	CATTTATTTATAAAAATATA SEQ ID NO:1749	0.5	-10.8	41.3	-10	-1.2	-6.5
1447	GAGGATGATAAATATGGGTA SEQ ID NO:1750	0.5	-18.3	56.7	-18.8	0	-2.7
1469	AATACTAGATTTCTTTCCTC SEQ ID NO:1751	0.5	-19.8	61.8	-20.3	0	-4.5
1824	AAATAAAATACTTCTGAGAT SEQ ID NO:1752	0.5	-13.6	46.6	-14.1	0	-2.8
7	TGCTGGTGGGAAGCAGCCGT SEQ ID NO:1753	0.6	-29.7	80.5	-27.4	-2.9	-8.4
220	GCACACTCGGCAGCAGCCAC SEQ ID NO:1754	0.6	-30.6	82.3	-28	-3.2	-9.8
281	CACACTTCATGCCATCCATG SEQ ID NO:1755	0.6	-25.5	71.3	-24.5	-1.6	-4.7
500	CCGTGAGAGAAACAAATCTG SEQ ID NO:1756	0.6	-19.2	56.7	-19.8	0	-3.1

position	oligo	kcal/ mol	kcal/ mol	deg C	kcal/ mol	kcal/mol	kcal/mol
		total binding	duplex formation	Tm of Duplex	target structure	Intra- molecular oligo	Inter- molecular oligo
1092	GCACAATTAAATTCTAGAGA SEQ ID NO:1757	0.6	-17.4	54.8	-18	0	-5.8
1095	AAAGCACAATTAAATTCTAG SEQ ID NO:1758	0.6	-14.8	49	-15.4	0	-4.1
1301	TATTTATGGAAGTGATGTG SEQ ID NO:1759	0.6	-18	57.4	-18.6	0	-1.8
1466	ACTAGATTTCTTTCCTCAAG SEQ ID NO:1760	0.6	-20.8	63.9	-21.4	0	-4.5
1764	AAGATTCCTTTCAAATATACT SEQ ID NO:1761	0.6	-15.7	51.6	-15.8	-0.1	-5.2
1089	CAATTAAATTCTAGAGAAGC SEQ ID NO:1762	0.7	-15.8	51.4	-16.5	0	-5.8
1934	GCAGCTTTACATTCAAAGGC SEQ ID NO:1763	0.7	-22.8	67	-22.7	-0.6	-4.5
1950	AAACCTAACAGCTTATCCAG SEQ ID NO:1764	0.7	-20.6	60.6	-19.7	-1.6	-5.7
504	TGCTCCGTGAGAGAAACAAA SEQ ID NO:1765	0.8	-21	60.4	-20.7	-1	-6.1
963	AGTCAAAGAACTAATTTGAC SEQ ID NO:1766	0.8	-15.9	51.7	-13.3	-3.4	-9.4
1168	TCAAACATCTTACTTCCTTC SEQ ID NO:1767	0.8	-20.7	62.9	-21.5	0	-1
1298	TTATGGAAGTGATGTGTTT SEQ ID NO:1768	0.8	-19.6	61.6	-20.4	0	-1.3
1306	AAAGCTATTTATGGAAGTGT SEQ ID NO:1769	0.8	-18.4	57.4	-19.2	0	-5.1
79	GAGCGTGGTCAGCAGCAAGA SEQ ID NO:1770	0.9	-26.8	76.2	-26.1	-1.5	-5.4
90	GCAGGCACGAGGAGCGTGGT SEQ ID NO:1771	0.9	-29.8	81	-27.9	-2.8	-10.3
651	TGAACAATCACGAAAATAGA SEQ ID NO:1772	0.9	-15	48.5	-15.2	-0.4	-4.4
725	TCACAATTTGGATCTTCAAA SEQ ID NO:1773	0.9	-18.4	56.9	-18.1	-1.1	-5.9
847	TACACACACATTTAACAAAT SEQ ID NO:1774	0.9	-16	51	-16.9	0	-2.5
1395	TAAAAATATATAAATATTTA SEQ ID NO:1775	0.9	-8.2	36.4	-6.8	-2.3	-7.6
409	GCCTGACTGGCAGTTGCAGG SEQ ID NO:1776	1	-29.1	81.5	-27.6	-2.5	-10.2
612	AGCCGGGATCAGCGTGGATT SEQ ID NO:1777	1	-28.4	76.8	-28.5	-0.7	-7.6
709	CAAAAATTACATGTACTTAT SEQ ID NO:1778	1	-14.4	48.2	-14.9	0	-7.7
1458	TCTTTCCTCAAGAGGATGAT SEQ ID NO:1779	1	-22.2	66.4	-21.6	-1.5	-10.2
1465	CTAGATTTCTTTCCTCAAGA SEQ ID NO:1780	1	-21.2	64.7	-21.3	-0.7	-6.8
1731	ATATTTTAAAGTTGACATGT SEQ ID NO:1781	1	-16.3	53.1	-17.3	0	-6.9
555	TCTTTCACAACCTCTTCTCT SEQ ID NO:1782	1.1	-22	67.8	-23.1	0	-0.7
851	ACTATACACACACATTTAAC SEQ ID NO:1783	1.1	-17.5	55	-18.6	0	-2.4
1812	TCTGAGATATTTCTTAAGAA SEQ ID NO:1784	1.1	-18.6	57.9	-19.7	0	-4.6
658	TGTGTGTTGAACAATCACGA SEQ ID NO:1785	1.2	-20.5	60.9	-19.8	-1.9	-8.7
1093	AGCACAATTAAATTCTAGAG SEQ ID NO:1786	1.2	-16.8	53.7	-18	0	-5.8

position	oligo	kcal/ mol	kcal/ mol	deg C	kcal/ mol	kcal/mol	kcal/mol
		total binding	duplex formation	Tm of Duplex	target structure	Intra- molecular oligo	Inter- molecular oligo
1394	AAAAATATATAAATATTTAC SEQ ID NO:1787	1.2	-8.7	37.3	-7.6	-2.3	-7.9
1477	CAACAAATAATACTAGATTT SEQ ID NO:1788	1.2	-13.8	46.9	-15	0	-4.5
1478	TCAACAAATAATACTAGATT SEQ ID NO:1789	1.2	-14.1	47.7	-15.3	0	-4.5
1479	TTCAACAAATAATACTAGAT SEQ ID NO:1790	1.2	-14.1	47.7	-15.3	0	-4.5
1740	ATTCCACCTATATTTTAAAG SEQ ID NO:1791	1.2	-18.3	56.4	-19.5	0	-4.6
306	GAAGGCTGACACCTCAGCCC SEQ ID NO:1792	1.3	-29.3	79.1	-24.5	-6.1	-13.4
604	TCAGCGTGGATTTAACCATT SEQ ID NO:1793	1.3	-22.9	65.8	-23.3	-0.8	-5.5
605	ATCAGCGTGGATTTAACCAT SEQ ID NO:1794	1.3	-22.8	65.5	-23.2	-0.8	-5.5
1454	TCCTCAAGAGGATGATAAAT SEQ ID NO:1795	1.3	-19	57.7	-18.9	-1.2	-9.7
611	GCCGGGATCAGCGTGGATTT SEQ ID NO:1796	1.4	-28.5	76.9	-29.4	0	-7.6
1393	AAAATATATAAATATTTACC SEQ ID NO:1797	1.4	-11.4	42.2	-10.5	-2.3	-7.9
1823	AATAAAATACTTCTGAGATA SEQ ID NO:1798	1.4	-14	47.7	-15.4	0	-2.8
1873	TAAAATACAGGTAAATACTG SEQ ID NO:1799	1.4	-13.7	46.7	-14.4	-0.5	-4
170	GGCTGCTTTTGCCTCACTG SEQ ID NO:1800	1.5	-26.7	76.8	-26.1	-2.1	-8.4
177	CAGCGCGGGCTGCTTTTGCA SEQ ID NO:1801	1.5	-30.5	81	-28.7	-3.3	-12.4
1077	AGAGAAGCTACCTACCAAGG SEQ ID NO:1802	1.5	-23.1	66.2	-23.3	-1.2	-6.9
1765	TAAGATTCTTTCAAATATAC SEQ ID NO:1803	1.5	-14.5	49.2	-15.5	-0.1	-5.6
144	CAGTGTTGAGGGCAGTCCAC SEQ ID NO:1804	1.6	-27.2	79.2	-27.7	-1	-5.6
261	CCTGAGACTGTGCGGTAGCA SEQ ID NO:1805	1.6	-27.6	76.9	-27.4	-1.8	-6.3
560	CATTCTCTTTTCAAACTTCT SEQ ID NO:1806	1.6	-21.4	65.4	-23	0	-1
603	CAGCGTGGATTTAACCATTT SEQ ID NO:1807	1.6	-22.6	64.7	-23.6	-0.3	-5.5
1060	AGGAAGGGCTAAATATTTTA SEQ ID NO:1808	1.6	-18.2	56.5	-19.8	0	-6.6
1088	AATTAAATTTCTAGAGAAGCT SEQ ID NO:1809	1.6	-16	52	-17.6	0	-5.8
1098	AAAAAAGCACAATTAAATTC SEQ ID NO:1810	1.6	-12.1	43.3	-13.7	0	-4.1
1446	AGGATGATAAATATGGGTAG SEQ ID NO:1811	1.6	-17.7	55.6	-19.3	0	-2.7
2	GTGGGAAGCAGCCGTGACCC SEQ ID NO:1812	1.7	-30.6	80.7	-31.4	-0.8	-5.4
8	TTGCTGGTGGGAAGCAGCCG SEQ ID NO:1813	1.7	-28.6	77.5	-27.4	-2.9	-8.4
11	TCTTTGCTGGTGGGAAGCAG SEQ ID NO:1814	1.7	-25.4	73.9	-25.2	-1.9	-6.4
1386	ATAAATATTTACCTTCATAC SEQ ID NO:1815	1.7	-16.1	52.2	-17.3	0	-7.9
1485	ACCATTTTCAACAAATAATA SEQ ID NO:1816	1.7	-15.8	50.6	-17	-0.1	-2.7

position	oligo	kcal/ mol	kcal/ mol	deg C	kcal/ mol	kcal/mol	kcal/mol
		total binding	duplex formation	Tm of Duplex	target structure	Intra- molecular oligo	Inter- molecular oligo
1628	AGCACTTATGTTTAAATAAG SEQ ID NO:1817	1.7	-16.1	52.3	-16.6	-1.1	-6.6
1683	CAAACTCCTAAAACTTAT SEQ ID NO:1818	1.7	-17.5	53.1	-19.2	0	-1.3
1820	AAAATACTTCTGAGATATTT SEQ ID NO:1819	1.7	-15.2	50.4	-15.8	-1	-4.6
1863	GTAAATACTGAAATAATTCT SEQ ID NO:1820	1.7	-13.9	47.4	-14.4	-1.1	-4.8
421	CCTGTCACAGATGCCTGACT SEQ ID NO:1821	1.8	-27.1	75.9	-27.2	-1.7	-6.3
1305	AAGCTATTTATGGAAGTGTA SEQ ID NO:1822	1.8	-18.8	58.8	-20.6	0	-5.1
1375	CCTTCATACACACAAACC SEQ ID NO:1823	1.8	-22.2	63	-24	0	-0.9
1116	CCCAAAGCCAAAAA SEQ ID NO:1824	1.9	-14.8	46.6	-16.7	0	-3.2
1167	CAAACATCTTACTTCCTCA SEQ ID NO:1825	1.9	-21	62.6	-22.9	0	-1
1170	CTTCAACATCTTACTTCCT SEQ ID NO:1826	1.9	-21.2	63.4	-23.1	0	-1
1174	TAAGCTTCAAACATCTTACT SEQ ID NO:1827	1.9	-18.6	57.7	-20.5	0	-6.8
1626	CACTTATGTTTAAATAAGGT SEQ ID NO:1828	1.9	-16.7	53.6	-17	-1.5	-7.1
1822	ATAAAATACTTCTGAGATAT SEQ ID NO:1829	1.9	-14.7	49.3	-16.6	0	-2.8
1855	TGAAATAATTCTTAAATAAG SEQ ID NO:1830	1.9	-11	41.6	-11.7	-1.1	-4.3
1878	AAGAATAAAATACAGGTAAA SEQ ID NO:1831	1.9	-12.1	43.4	-14	0	-3.6
1996	CTTGTTCTTTTTATTGAAC SEQ ID NO:1832	1.9	-18	57.7	-18.8	-1	-4.9
503	GCTCCGTGAGAGAAACAAT SEQ ID NO:1833	2	-21	60.4	-21.9	-1	-6.1
1172	AGCTTCAAACATCTTACTTC SEQ ID NO:1834	2	-20.1	62	-22.1	0	-4.3
1862	TAAATACTGAAATAATTCTT SEQ ID NO:1835	2	-12.8	45.1	-13.6	-1.1	-4.2
87	GGCAGGAGGCGTGGTCAG SEQ ID NO:1836	2.1	-28.4	78.4	-27	-3.5	-9.3
169	GCTGCTTTTGCACTCACTGC SEQ ID NO:1837	2.1	-27.3	78.7	-27.3	-2.1	-7.4
424	CCCCCTGTCACAGATGCCTG SEQ ID NO:1838	2.1	-31.4	82.3	-32.4	-1	-5.3
844	ACACACATTTAACAATCTA SEQ ID NO:1839	2.1	-16.4	52.2	-18.5	0	-2.7
1139	CTGGTTGTTTTATTTTGA SEQ ID NO:1840	2.1	-20.6	63.9	-22.7	0	-2.8
420	CTGTCACAGATGCCTGACTG SEQ ID NO:1841	2.2	-25.1	72.2	-25.6	-1.7	-7
1138	TGGTTGTTTTATTTTGA SEQ ID NO:1842	2.2	-19.8	62.2	-22	0	-2.8
1443	ATGATAAATATGGGTAGGGA SEQ ID NO:1843	2.2	-18.9	57.9	-21.1	0	-2.7
1739	TTCCACCTATATTTTAAAGT SEQ ID NO:1844	2.2	-19.5	59.3	-21.7	0	-4.6
280	ACACTTCATGCCATCCATGC SEQ ID NO:1845	2.3	-26.6	74.3	-27.1	-1.8	-5
417	TCACAGATGCCTGACTGGCA SEQ ID NO:1846	2.3	-26.7	75	-25.6	-3.4	-9.2

position	oligo	kcal/ mol	kcal/ mol	deg C	kcal/ mol	kcal/mol	kcal/mol
		total binding	duplex formation	Tm of Duplex	target structure	Intra- molecular oligo	Inter- molecular oligo
848	ATACACACACATTTAACAAA SEQ ID NO:1847	2.3	-16	51	-18.3	0	-2.4
850	CTATACACACACATTTAACA SEQ ID NO:1848	2.3	-18	55.7	-20.3	0	-2.4
1163	CATCTTACTTCCTTCAGGGG SEQ ID NO:1849	2.3	-25.1	73.5	-26.9	-0.2	-4.7
1678	CTCCTAAAACTTATTTTCA SEQ ID NO:1850	2.3	-17.4	54.4	-18.7	-0.9	-3.3
1373	TTCATACACACAAAACCAC SEQ ID NO:1851	2.4	-20.2	59.4	-22.6	0	-0.9
1483	CATTTTCAACAAATAATACT SEQ ID NO:1852	2.4	-14.7	48.7	-16.6	-0.1	-2.7
1575	AAATCCAGAGTGACTCCTAT SEQ ID NO:1853	2.4	-22.2	65	-23.9	-0.4	-5.5
78	AGCGTGGTCAGCAGCAAGAC SEQ ID NO:1854	2.5	-26.4	75.4	-27.3	-1.5	-7.3
260	CTGAGACTGTGCGGTAGCAA SEQ ID NO:1855	2.5	-24.9	70.9	-25.4	-2	-7
1171	GCTTCAAACATCTTACTTCC SEQ ID NO:1856	2.5	-22.1	65.6	-24.6	0	-2.8
1321	GAGGTGGCATACGTTAAAGC SEQ ID NO:1857	2.5	-22.8	66.1	-24.7	-0.3	-4.8
1453	CCTCAAGAGGATGATAAATA SEQ ID NO:1858	2.5	-18.3	56	-20.3	-0.1	-7.5
1562	CTCCTATAATATGGATAAT SEQ ID NO:1859	2.5	-17.5	54.8	-19.3	-0.1	-9
1574	AATCCAGAGTGACTCCTATA SEQ ID NO:1860	2.5	-22.6	66.7	-24.4	-0.4	-5.5
422	CCCTGTACAGATGCCTGAC SEQ ID NO:1861	2.6	-28.2	77.5	-29.3	-1.4	-5.9
561	GCATTCTCTTTCACAACTTC SEQ ID NO:1862	2.6	-22.3	67.8	-24.9	0	-3.4
721	AATTTGGATCTTCAAAAATT SEQ ID NO:1863	2.6	-15.1	49.6	-16.3	-1.3	-6.3
724	CACAATTTGGATCTTCAAAA SEQ ID NO:1864	2.6	-17.3	53.9	-19	-0.8	-5.8
706	AAATTACATGTACTTATGCT SEQ ID NO:1865	2.7	-17.8	55.9	-20	0	-7.7
713	TCTTCAAAAATTACATGTAC SEQ ID NO:1866	2.7	-15.5	50.9	-17.7	0	-7.7
1677	TCCTAAAACTTATTTTCAT SEQ ID NO:1867	2.7	-16.5	52.6	-18.3	-0.7	-3.2
1821	TAAAATACTTCTGAGATATT SEQ ID NO:1868	2.7	-14.8	49.6	-17.5	0	-3.9
223	AGCGCACACTCGGCAGCAGC SEQ ID NO:1869	2.8	-30.3	81.5	-30.8	-2.3	-9.7
1297	TATGGAAGTGTATGTGTTTC SEQ ID NO:1870	2.8	-19.9	62.8	-22.7	0	-2.6
1627	GCACTTATGTTTAAATAAGG SEQ ID NO:1871	2.8	-17.3	54.7	-18.5	-1.5	-7.1
92	GTGCAGGCACGAGGAGCGTG SEQ ID NO:1872	2.9	-28.6	78.3	-28.4	-3.1	-11.5
289	CCCCGGGCCACACTTCATGC SEQ ID NO:1873	2.9	-32.7	83.1	-34.7	0	-9.7
410	TGCCCTGACTGGCAGTTGCAG SEQ ID NO:1874	2.9	-27.9	78.6	-27.6	-3.2	-11.5
556	CTCTTTTCACAACTTCTTCTC SEQ ID NO:1875	2.9	-22	67.8	-24.9	0	-0.7
839	CATTTAACAAATCTACATGC SEQ ID NO:1876	2.9	-17.1	53.7	-20	0	-5

position	oligo	kcal/ mol	kcal/ mol	deg C	kcal/ mol	kcal/mol	kcal/mol
		total binding	duplex form- ation	Tm of Duplex	target struc- ture	Intra- molecular oligo	Inter- molecular oligo
1075	AGAAGCTACCTACCAAGGAA SEQ ID NO:1877	2.9	-22.4	63.9	-23.7	-1.6	-9.2
1440	ATAAATATGGGTAGGGAAGA SEQ ID NO:1878	2.9	-18.2	56.3	-21.1	0	-2.7
720	ATTGGGATCTTCAAAAATTA SEQ ID NO:1879	3	-15.5	50.7	-17.1	-1.3	-6.3
849	TATACACACACATTTAACAA SEQ ID NO:1880	3	-16.4	52.2	-19.4	0	-2.4
1087	ATTAAATTCTAGAGAAGCTA SEQ ID NO:1881	3.1	-16.4	53.2	-19.5	0	-5.8
1374	CTTCATACACACACAAACCA SEQ ID NO:1882	3.1	-20.9	60.7	-24	0	-0.9
1448	AGAGGATGATAAATATGGGT SEQ ID NO:1883	3.1	-18.6	57.5	-21.7	0	-2.7
1564	GACTCCTATAATTTATGGATA SEQ ID NO:1884	3.1	-19	58.5	-21.4	-0.1	-9
1576	GAAATCCAGAGTGACTCCTA SEQ ID NO:1885	3.1	-22.8	66.4	-25.2	-0.4	-5.5
557	TCTCTTTACAACTTCTTCT SEQ ID NO:1886	3.2	-22	67.8	-25.2	0	-0.7
1484	CCATTTTCAACAAATAATAC SEQ ID NO:1887	3.2	-15.8	50.6	-18.5	-0.1	-2.7
563	CAGCATTTCTTTTCACAACT SEQ ID NO:1888	3.3	-22.5	67.3	-25.8	0	-4.1
860	TTCAGTGTTACTATACACAC SEQ ID NO:1889	3.3	-19.9	62.3	-20.9	-2.3	-6.5
1864	GGTAAATACTGAAATAATTC SEQ ID NO:1890	3.3	-14.2	47.9	-16.9	-0.3	-7.3
1871	AAATACAGGTAAATACTGAA SEQ ID NO:1891	3.3	-14.6	48.4	-17.9	0	-4.1
1872	AAAATACAGGTAAATACTGA SEQ ID NO:1892	3.3	-14.6	48.4	-16.9	-0.9	-4.1
516	GATGCCATGTCATGCTCCGT SEQ ID NO:1893	3.4	-28.5	78.3	-31.4	-0.2	-4.6
562	AGCATTTCTTTTCACAACTT SEQ ID NO:1894	3.4	-21.9	66.4	-25.3	0	-4.1
841	CACATTTAACAATCTACAT SEQ ID NO:1895	3.4	-16.2	51.7	-19.6	0	-2.7
1400	ATTTATAAAAAATATATAAAT SEQ ID NO:1896	3.4	-8.5	36.9	-10.3	-1.5	-6.5
1442	TGATAAATATGGGTAGGGAA SEQ ID NO:1897	3.5	-18.2	56.1	-21.7	0	-2.7
1732	TATATTTTAAAGTTGACATG SEQ ID NO:1898	3.5	-14.8	49.7	-18.3	0	-4.7
419	TGTCACAGATGCCTGACTGG SEQ ID NO:1899	3.6	-25.4	72.8	-27.3	-1.7	-7.1
859	TCAGTGTTACTATACACACA SEQ ID NO:1900	3.6	-20.5	63.2	-21.8	-2.3	-6.5
1738	TCCACCTATATTTTAAAGTT SEQ ID NO:1901	3.6	-19.5	59.3	-23.1	0	-4.6
502	CTCCGTGAGAGAAACAAATC SEQ ID NO:1902	3.7	-19.6	58	-22.7	-0.3	-5
5	CTGGTGGGAAGCAGCCGTGA SEQ ID NO:1903	3.8	-28.5	77.6	-31.1	-1.1	-5.4
9	TTTGCTGGTGGGAAGCAGCC SEQ ID NO:1904	3.8	-27.9	78.2	-28.8	-2.9	-7.8
10	CTTTGCTGGTGGGAAGCAGC SEQ ID NO:1905	3.8	-26.8	76.6	-28.1	-2.5	-7.4
515	ATGCCATGTCATGCTCCGTG SEQ ID NO:1906	3.8	-27.9	76.8	-31.2	-0.2	-4.6

position	oligo	kcal/ mol	kcal/ mol	deg C	kcal/ mol	kcal/mol	kcal/mol
		total binding	duplex form- ation	Tm of Duplex	target struc- ture	Intra- molecular oligo	Inter- molecular oligo
606	GATCAGCGTGGATTTAACCA SEQ ID NO:1907	3.9	-23.4	66.7	-26.5	-0.6	-5.9
1303	GCTATTTATGGAAGTGTATG SEQ ID NO:1908	3.9	-19.5	60.6	-23.4	0	-2.8
1563	ACTCCTATAATTATGGATAA SEQ ID NO:1909	3.9	-17.7	55.3	-20.9	-0.1	-9
714	ATCTTCAAAAATTACATGTA SEQ ID NO:1910	4	-15.3	50.4	-18.8	0	-7.5
1449	AAGAGGATGATAAATATGGG SEQ ID NO:1911	4	-16.7	52.8	-20.7	0	-2.7
1866	CAGGTAAATACTGAAATAAT SEQ ID NO:1912	4	-14.4	48	-18.4	0	-3.8
6	GCTGGTGGGAAGCAGCCGTG SEQ ID NO:1913	4.1	-29.7	80.5	-31.6	-2.2	-8.4
518	CAGATGCCATGTCTGCTCC SEQ ID NO:1914	4.1	-27.2	76.6	-30.8	-0.1	-4.4
1099	AAAAAAGCACAAATTAAATT SEQ ID NO:1915	4.1	-11	41.2	-15.1	0	-4.1
1865	AGGTAAATACTGAAATAATT SEQ ID NO:1916	4.1	-13.8	47	-17.9	0	-3.8
600	CGTGGATTTAACCATTTCCCT SEQ ID NO:1917	4.2	-23.4	66.2	-26.7	-0.8	-4.8
609	CGGGATCAGCGTGGATTAA SEQ ID NO:1918	4.2	-23.7	66.7	-27.9	0	-5.7
1733	CTATATTTTAAAGTTGACAT SEQ ID NO:1919	4.2	-15.7	51.6	-19.9	0	-4.6
719	TTTGGATCTTCAAAAATTAC SEQ ID NO:1920	4.3	-15.7	51.2	-19.1	-0.8	-5.6
1304	AGCTATTTATGGAAGTGTAT SEQ ID NO:1921	4.3	-19.5	60.9	-23.8	0	-4.3
1441	GATAAATATGGGTAGGGAAG SEQ ID NO:1922	4.3	-18.2	56.3	-22.5	0	-2.2
843	CACACATTTAACAATCTAC SEQ ID NO:1923	4.4	-16.4	52.2	-20.8	0	-2.5
3	GGTGGGAAGCAGCCGTGACC SEQ ID NO:1924	4.5	-29.8	79.9	-33.6	-0.4	-5.4
517	AGATGCCATGTCTGCTCCG SEQ ID NO:1925	4.5	-27.3	75.3	-31.3	-0.2	-4.6
707	AAAATTACATGTACTTATGC SEQ ID NO:1926	4.6	-16.2	52.2	-20.3	0	-7.5
840	ACATTTAACAATCTACATG SEQ ID NO:1927	4.6	-15.5	50.5	-20.1	0	-4.7
1103	AAAAAAAAAAGCACAATTA SEQ ID NO:1928	4.6	-9.5	38.6	-14.1	0	-4.1
1176	CATAAGCTTCAACATCTTA SEQ ID NO:1929	4.6	-18.2	56.5	-22.8	0	-6.8
1302	CTATTTATGGAAGTGTATGT SEQ ID NO:1930	4.6	-18.9	59.5	-23.5	0	-1.8
1676	CCTAAAACTTATTTTCATA SEQ ID NO:1931	4.7	-15.8	51	-19.5	-0.9	-3.3
564	GCAGCATCTCTTTCACAAC SEQ ID NO:1932	4.8	-23.4	69.6	-28.2	0	-4.7
842	ACACATTTAACAATCTACA SEQ ID NO:1933	4.8	-16.4	52.2	-21.2	0	-2.7
718	TTGGATCTTCAAAAATTACA SEQ ID NO:1934	4.9	-16.3	52.1	-21.2	0	-5
1104	AAAAAAAAAAGCACAATT SEQ ID NO:1935	4.9	-9.1	38	-14	0	-4.1
1450	CAAGAGGATGATAAATATGG SEQ ID NO:1936	4.9	-16.2	51.7	-21.1	0	-2.7

position	oligo	kcal/ mol	kcal/ mol	deg C	kcal/ mol	kcal/mol	kcal/mol
		total binding	duplex form- ation	Tm of Duplex	target struc- ture	Intra- molecular oligo	Inter- molecular oligo
75	GTGGTCAGCAGCAAGACGCT SEQ ID NO:1937	5	-27.3	77.1	-30.8	-1.4	-8.5
91	TGCAGGCACGAGGAGCGTGG SEQ ID NO:1938	5	-28.6	77.4	-30.1	-3.5	-11.6
1954	AACAAAACCTAACAGCTTAT SEQ ID NO:1939	5	-17.6	53.7	-22.6	0	-4.5
1115	CCAAAGCCAAAAAAAAAAAA SEQ ID NO:1940	5.2	-12.1	42.5	-17.3	0	-2.4
1870	AATACAGGTAAATACTGAAA SEQ ID NO:1941	5.2	-14.6	48.4	-18.8	-0.9	-4.1
77	GCGTGGTCAGCAGCAAGACG SEQ ID NO:1942	5.3	-27.2	74.9	-31.6	-0.7	-7.7
414	CAGATGCCTGACTGGCAGTT SEQ ID NO:1943	5.4	-26.7	75.7	-28.5	-3.6	-8.6
423	CCCCTGTACAGATGCCTGA SEQ ID NO:1944	5.4	-30	80.3	-33.9	-1.4	-5.7
602	AGCGTGGATTAAACCATTTTC SEQ ID NO:1945	5.5	-22.3	65	-26.9	-0.8	-5.5
708	AAAAATTACATGTACTTATG SEQ ID NO:1946	5.5	-13.7	46.9	-18.7	0	-7.7
1100	AAAAAAAAGCACAATTAAAT SEQ ID NO:1947	5.5	-10.2	39.8	-15.7	0	-4.1
1955	AAACAAAACCTAACAGCTTA SEQ ID NO:1948	5.5	-16.9	52.1	-22.4	0	-4.5
413	AGATGCCTGACTGGCAGTTG SEQ ID NO:1949	5.6	-26	74.4	-28	-3.6	-8.6
76	CGTGGTCAGCAGCAAGACGC SEQ ID NO:1950	5.7	-27.2	74.9	-31.4	-1.4	-8.5
858	CAGTGTACTATACACACAC SEQ ID NO:1951	5.7	-20.3	62.3	-23.7	-2.3	-6.5
1105	AAAAAAAAAAAAAGCACAAT SEQ ID NO:1952	5.8	-8.3	36.7	-14.1	0	-4.1
601	GCGTGGATTAAACCATTTCC SEQ ID NO:1953	5.9	-24.3	68.3	-29.3	-0.8	-6.2
1867	ACAGGTAAATACTGAAATAA SEQ ID NO:1954	5.9	-14.6	48.4	-19.5	-0.9	-4.1
411	ATGCCTGACTGGCAGTTGCA SEQ ID NO:1955	6	-27.9	78.3	-30.3	-3.6	-11.9
607	GGATCAGCGTGGATTAAACC SEQ ID NO:1956	6	-23.9	68.1	-29.9	0	-5.7
415	ACAGATGCCTGACTGGCAGT SEQ ID NO:1957	6.1	-26.8	75.9	-29.8	-3.1	-9.8
1102	AAAAAAAAAAGCACAATTAA SEQ ID NO:1958	6.1	-9.5	38.6	-15.6	0	-4.1
1734	CCTATATTTTAAAGTTGACA SEQ ID NO:1959	6.1	-17.7	55.5	-23.8	0	-4.6
1086	TTAAATTCTAGAGAAGCTAC SEQ ID NO:1960	6.2	-16.6	53.8	-22.8	0	-5.8
1166	AAACATCTTACTTCCTTCAG SEQ ID NO:1961	6.3	-20.3	61.6	-26.6	0	-1.6
412	GATGCCTGACTGGCAGTTGC SEQ ID NO:1962	6.4	-27.8	78.6	-30.6	-3.6	-9.7
717	TGGATCTTCAAAAATTACAT SEQ ID NO:1963	6.6	-16.2	51.9	-22.8	0	-5
1675	CTAAAAACTTATTTTCATAC SEQ ID NO:1964	6.7	-14	47.7	-19.7	-0.9	-3.3
1076	GAGAAGCTACTACCAAGGA SEQ ID NO:1965	6.8	-23.7	67.2	-28.9	-1.6	-9.2
657	GTGTGTTGAACAATCACGAA SEQ ID NO:1966	6.9	-19.8	59.1	-25.3	-1.3	-8.7

position	oligo	kcal/ mol	kcal/ mol	deg C	kcal/ mol	kcal/mol	kcal/mol
		total binding	duplex form- ation	Tm of Duplex	target struc- ture	Intra- molecular oligo	Inter- molecular oligo
715	GATCTTCAAAAATTACATGT SEQ ID NO:1967	6.9	-16.2	52.1	-23.1	0	-6.3
1868	TACAGGTAAATACTGAAATA SEQ ID NO:1968	6.9	-15	49.5	-20.9	-0.9	-4.1
1880	TCAAGAATAAAATACAGGTA SEQ ID NO:1969	7.1	-14.6	48.6	-21.7	0	-3.4
656	TGTGTTGAACAATCACGAAA SEQ ID NO:1970	7.3	-17.9	54.5	-23.8	-1.3	-8.7
1164	ACATCTTACTTCCTTCAGGG SEQ ID NO:1971	7.4	-24.1	71.4	-31.5	0	-4.7
1886	CCAACTTCAAGAATAAAATA SEQ ID NO:1972	7.4	-14.8	48.3	-22.2	0	-3.5
1106	AAAAAAAAAAAAAGCACAA SEQ ID NO:1973	7.5	-7.6	35.7	-15.1	0	-4.1
1101	AAAAAAAAAGCACAATTAAA SEQ ID NO:1974	7.6	-9.5	38.6	-17.1	0	-4.1
1881	TTCAAGAATAAAATACAGGT SEQ ID NO:1975	7.6	-15	49.4	-22.6	0	-2.9
1884	AACTTCAAGAATAAAATACA SEQ ID NO:1976	7.6	-13	45.2	-20.6	0	-3.5
416	CACAGATGCCTGACTGGCAG SEQ ID NO:1977	7.7	-26.3	73.6	-30.4	-3.6	-9.8
608	GGGATCAGCGTGGATTAAAC SEQ ID NO:1978	8.2	-23.1	67	-31.3	0	-5.3
1107	AAAAAAAAAAAAAGCACA SEQ ID NO:1979	8.3	-7.6	35.7	-15.9	0	-4.1
1885	CAACTTCAAGAATAAAATAC SEQ ID NO:1980	8.4	-13	45.2	-21.4	0	-3.5
716	GGATCTTCAAAAATTACATG SEQ ID NO:1981	8.5	-16.2	51.9	-24.7	0	-5
1451	TCAAGAGGATGATAAATATG SEQ ID NO:1982	8.6	-15.4	50.4	-24	0	-2.7
1879	CAAGAATAAAATACAGGTAA SEQ ID NO:1983	8.6	-13.5	46.1	-22.1	0	-3.6
1735	ACCTATATTTTAAAGTTGAC SEQ ID NO:1984	8.8	-17.2	54.7	-26	0	-4.6
1883	ACTTCAAGAATAAAATACAG SEQ ID NO:1985	8.8	-13.7	46.7	-22.5	0	-3.5
1452	CTCAAGAGGATGATAAATAT SEQ ID NO:1986	8.9	-16.3	52.3	-25.2	0	-3.9
4	TGGTGGGAAGCAGCCGTGAC SEQ ID NO:1987	9.2	-27.8	76.3	-35.8	-1.1	-4.6
1114	CAAAGCCAAAAAAAAAAAAA SEQ ID NO:1988	9.3	-9.4	38.4	-18.7	0	-3.2
1165	AACATCTTACTTCCTTCAGG SEQ ID NO:1989	9.3	-22.2	66.4	-31.5	0	-4.1
1882	CTTCAAGAATAAAATACAGG SEQ ID NO:1990	9.8	-14.7	48.6	-24.5	0	-3.5
1109	CCAAAAAAAAAAAAAGCA SEQ ID NO:1991	10.3	-9.4	38.4	-19.7	0	-4.1
1108	CAAAAAAAAAAAAAAGCAC SEQ ID NO:1992	10.5	-7.6	35.7	-18.1	0	-4.1
1869	ATACAGGTAAATACTGAAAT SEQ ID NO:1993	10.9	-15.3	50	-25.2	-0.9	-4.1
1113	AAAGCCAAAAAAAAAAAAA SEQ ID NO:1994	11.6	-8	36.3	-19.6	0	-3.2
1110	GCCAAAAAAAAAAAAAGC SEQ ID NO:1995	11.7	-10.5	40.1	-22.2	0	-2.8
1175	ATAAGCTTCAACATCTTAC SEQ ID NO:1996	12.4	-17.7	55.8	-30.1	0	-6.8

position	oligo	kcal/ mol	kcal/ mol	deg C	kcal/ mol	kcal/mol	kcal/mol
		total binding	duplex formation	Tm of Duplex	target structure	Intra- molecular oligo	Inter- molecular oligo
1737	CCACCTATATTTTAAAGTTG SEQ ID NO:1997	13	-19.1	57.9	-32.1	0	-4.6
1736	CACCTATATTTTAAAGTTGA SEQ ID NO:1998	14.9	-17.7	55.5	-32.6	0	-4.6
1112	AAGCCAAAAAAAAAAAAA SEQ ID NO:1999	16.6	-8	36.3	-24.6	0	-3.2
1111	AGCCAAAAAAAAAAAAAAG SEQ ID NO:2000	17.1	-8.7	37.4	-25.8	0	-3.2

Example 15

Western blot analysis of ESM-1 protein levels

[00230] Western blot analysis (immunoblot analysis) is carried out

5 using standard methods. Cells are harvested 16-20 h after oligonucleotide treatment, washed once with PBS, suspended in Laemmli buffer (100 ul/well), boiled for 5 minutes and loaded on a 16% SDS-PAGE gel. Gels are run for 1.5 hours at 150 V, and transferred to membrane for western blotting. Appropriate primary antibody directed

10 to ESM-1 is used, with a radiolabeled or fluorescently labeled secondary antibody directed against the primary antibody species. Bands are visualized using a PHOSPHORIMAGER™ (Molecular Dynamics, Sunnyvale CA).

WHAT IS CLAIMED IS:

1. An antisense compound 8 to 30 nucleobases in length targeted to a nucleic acid molecule encoding ESM-1, wherein said
5 antisense compound specifically hybridizes with and inhibits the expression of ESM-1.
2. The antisense compound of claim 1 which is an antisense oligonucleotide.
3. The antisense oligonucleotide of claim 2 comprising a nucleic acid
10 sequence selected from the group consisting of at least eight contiguous bases of SEQ ID NO:1 – SEQ ID NO:2000.
4. The antisense oligonucleotide of claim 2 comprising a nucleic acid sequence selected from the group consisting of SEQ ID NO:1 – SEQ ID NO:2000.
- 15 5. The antisense compound of claim 2, 3, or 4 wherein the antisense oligonucleotide comprises at least one modified internucleoside linkage.
6. The antisense compound of claim 5 wherein the modified internucleoside linkage is a phosphorothioate linkage.
7. The antisense compound of claim 2, 3, or 4 wherein the antisense
20 oligonucleotide comprises at least one modified sugar moiety.
8. The antisense compound of claim 7 wherein the modified sugar moiety is a 2'-O-methoxyethyl sugar moiety.
9. The antisense compound of claim 2, 3, or 4 wherein the antisense oligonucleotide comprises at least one modified nucleobase.
- 25 10. The antisense compound of claim 9 wherein the modified nucleobase is a 5-methylcytosine.

11. The antisense compound of claim 2, 3, or 4 wherein the antisense oligonucleotide is a chimeric oligonucleotide.
12. A composition comprising the antisense compound of claim 1 and a pharmaceutically acceptable carrier or diluent.
- 5 13. The composition of claim 12 further comprising a colloidal dispersion system.
14. The composition of claim 13 wherein the antisense compound is an antisense oligonucleotide.
15. A method of inhibiting the expression of ESM-1 in cells or
10 tissues comprising contacting said cells or tissues with the antisense compound of claim 1 so that expression of ESM-1 is inhibited.
16. A method of treating a human having a disease or condition associated with ESM-1 comprising administering to said animal a
15 therapeutically or prophylactically effective amount of the antisense compound of claim 1 so that expression of ESM-1 is inhibited.
17. The method of claim 16 wherein the disease or condition is diabetes.
- 20 18. The method of claim 16 wherein the disease or condition is an immunological disorder.
19. The method of claim 16 wherein the disease or condition is a cardiovascular disorder.
20. The method of claim 16 wherein the disease or condition is
25 a neurologic disorder.
21. The method of claim 16 wherein the disease or condition is ischemia/reperfusion injury.
22. The method of claim 16 wherein the disease or condition is any form of cancer.
- 30 23. The method of claim 16 wherein the disease or condition is an angiogenic disorder.

Figure 1

3 ggtcacggctgcttcccaccagcaaagaccacgactggagagccgagccggaggcagctg 62
 M K S V L L L T T L L V P A H L V A

63 ggaaacatgaagagcgtcttgctgctgaccacgctcctcgtgcctgcacacctggtggcc 122
 A W S N N Y A V D C P Q H C D S S E C K

123 gcctggagcaataattatgcggtggactgcctcaacactgtgacagcagtgagtgcaaa 182
 S S P R C K R T V L D D C G C C R V C A

183 agcagccccgcgctgcaagaggacagtgctcgacgactgtggctgctgccgagtggtgcgct 242
 A G R G E T C Y R T V S G M D G M K C G

243 gcagggcggggagaaacttgctaccgcacagtctcaggcatggatggcatgaagtgtggc 302
 P G L R C Q P S N G E D P F G E E F G I

303 ccggggctgaggtgtcagccttctaataatggggaggatccttttggtgaagagtttggtatc 362
 C K D C P Y G T F G M D C R E T C N C Q

363 tgcaaagactgtccctacggcaccttcgggatggattgcagagagacctgcaactgccag 422
 S G I C D R G T G K C L K F P F F Q Y S

423 tcaggcatctgtgacagggggacgggaaaatgcctgaaattccccttcttccaatattca 482
 V T K S S N R F V S L T E H D M A S G D

483 gtaaccaagtcttccaacagatttggttctctcacggagcatgacatggcatctggagat 542
 G N I V R E E V V K E N A A G S P V M R

543 ggcaatattgtgagagaagaagttgtgaaagagaatgctgccgggtctccgtaatgagg 602
 K W L N P R * SEQ ID NO:2007

603 aaatggttaaataccacgctgatcccggtgtgatttctgagagaaggctctattttcgtg 662

663 attgttcaacacacagccaacatttttaggaactttctagatatagcataagtacatgtaa 722

723 tttttgaagatccaaattgtgatgcatggatccagaaaacaaaagtaggatactta 782

783 caatccataacatccatatgactgaacacttgtatgtgtttgttaaataattcgaatgcat 842

843 gtagatttgttaaattgtgtgtgtatagtaacactgaagaactaaaaatgcaatttaggta 902

903 atcttacatggagacaggtcaaccaaagaggagctaggcaaagctgaagaccgcagtga 962

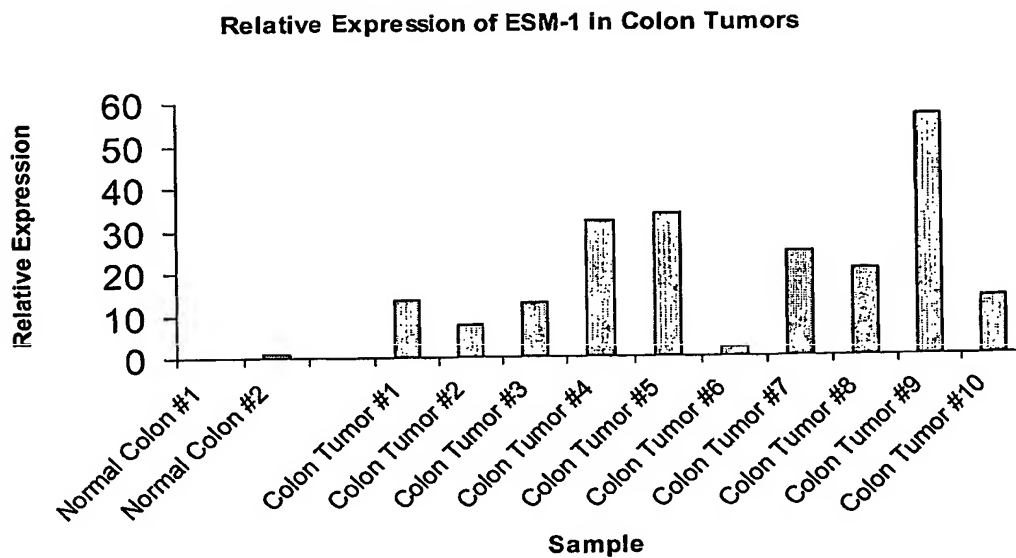
963 gtcaaattagttctttgactttgatgtacattaatgttgggatatggaatgaagacttaa 1022

Figure 1 cont.

1023	gagcaggagaagatggggaggggggtgggagtgggaaataaaatatttagcccttccttgg	1082
1083	taggtagcttctctagaatttaattgtgcttttttttttttttggctttgggaaaagtc	1142
1143	aaaataaaacaaccagaaaaccctgaaggaagtaagatgtttgaagcttatggaaattt	1202
1203	gagtaacaaacagctttgaactgagagcaatttcaaaaggctgctgatgtagttcccggg	1262
1263	ttacctgtatctgaaggacggttctggggcataggaaacacatacacttcataaaatagc	1322
1323	tttaacgtatgccacctcagagataaatctaagaagtattttaccactgggtggtttgtg	1382
1383	tgtgtatgaaggtaaataatttatatattttataaataaatgtgttagtgcaagtcact	1442
1443	tccttaccatattttatcatcctcttgaggaaagaaatctagtattatttgttgaaaatg	1502
1503	gttagaataaaaaacctatgactctataagggttttcaaactctgaggcatgataaattta	1562
1563	ttatccataattataggagtcactctggatttcaaaaaatgtcaaaaaatgagcaacaga	1622
1623	gggaccttattttaacataagtgtgtgacttcgggtgaattttcaatttaagggtatgaaa	1682
1683	ataagtttttaggaggtttgtaaaagaagaatcaattttcagcagaaaacatgtcaactt	1742
1743	taaaatataggtggaattaggagtatatatttgaaagaatcttagcaciaaacaggactgtg	1802
1803	tactagatgttcttaggaaatatctcagaagtattttatttgaagtgaagaacttattta	1862
1863	agaattatttcagtattttacctgtattttattcttgaagttggccaacagagttgtgaat	1922
1923	gtgtgtggaaggcctttgaatgtaaagctgcataagctgttaggttttgttttaaaagga	1982
1983	catgtttattattgttcaataaaaaagaacaagatac	2019

SEQ ID NO:2008

Figure 2



SEQUENCE LISTING

<110> Pharmacia Corporation
Weinstein, Edward J

<120> ANTISENSE MODULATION OF ENDOTHELIAL SPECIFIC MOLECULE 1
EXPRESSION

<130> 01189/1/PCT

<150> 60/404,495

<151> 2002-08-19

<160> 2008

<170> PatentIn version 3.2

<210> 1

<211> 20

<212> DNA

<213> artificial

<220>

<223> human ESM-1 antisense

<400> 1

gctcggctct ccagtcgtgg

20

<210> 2

<211> 20

<212> DNA

<213> artificial

<220>

<223> human ESM-1 antisense

<400> 2

ggctcggctc tccagtcgtg

20

<210> 3

<211> 20

<212> DNA

<213> artificial

<220>

<223> human ESM-1 antisense

<400> 3

cggctctcca gtcgtggtct

20

<210> 4

<211> 20

<212> DNA

<213> artificial

<220>

<223> human ESM-1 antisense

<400> 4
ctcggctctc cagtcgtggt 20

<210> 5
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 5
gcctagctcc ctcttttggt 20

<210> 6
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 6
cggctcggct ctccagtcgt 20

<210> 7
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 7
ggctctccag tcgtggtctt 20

<210> 8
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 8
gctttgccta gctccctctt 20

<210> 9
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 9
tcggctctcc agtcgtggtc 20

<210> 10
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 10
tgcctagctc cctctttggt 20

<210> 11
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 11
gctctccagt cgtggtcttt 20

<210> 12
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 12
agctttgcct agctccctct 20

<210> 13
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 13
cagctttgcc tagctccctc 20

<210> 14
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 14
tcagctttgc ctagctccct 20

<210> 15
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 15
accgtccttc agatacaggt 20

<210> 16
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 16
gtttctcccc gccctgcagc 20

<210> 17
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 17
ttgcctagct ccctctttgg 20

<210> 18
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 18
ccgtccttca gatacaggta 20

<210> 19
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 19
ctttgcctag ctccctcttt 20

<210> 20
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 20
ttcagctttg cctagctccc 20

<210> 21
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 21
agtttctccc cgccctgcag 20

<210> 22
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 22
caagtttctc cccgccctgc 20

<210> 23
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 23
gcaagtttct ccccgccctg 20

<210> 24
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 24
agcaagtttc tccccgccct 20

<210> 25
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 25
tttgcctagc tccctctttg 20

<210> 26
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 26
aagtttctcc ccgccctgca 20

<210> 27
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 27
cagtcgtggt ctttgctggt 20

<210> 28
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 28
tagcaagttt ctccccgccc 20

<210> 29
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 29
ccagtcgtgg tctttgctgg 20

<210> 30
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 30
ctccagtcgt ggtctttgct 20

<210> 31
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 31
ccggctcggc tctccagtcg 20

<210> 32
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 32
agtcgtggtc tttgctggtg 20

<210> 33
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 33
gtcgtcgagc actgtcctct 20

<210> 34
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 34
tctccagtcg tggctcttgc 20

<210> 35
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 35
gtagcaagtt tctccccgcc 20

<210> 36
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 36
cctccccatc ttctcctgct 20

<210> 37
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 37
agtcgtcgag cactgtcctc 20

<210> 38
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 38
gcactgtcct cttgcagcgc 20

<210> 39
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 39
tccagtcgtg gtctttgctg 20

<210> 40
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 40
gtcgagcact gtcctcttgc 20

<210> 41
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 41
tcgtcgagca ctgtcctctt 20

<210> 42
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 42
cctagctccc tctttggttg 20

<210> 43
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 43
cgtccttcag atacaggtaa 20

<210> 44
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 44
tccggctcgg ctctccagtc 20

<210> 45
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 45
ctccccatct tctcctgctc 20

<210> 46
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 46
cagtcgtcga gcactgtcct 20

<210> 47
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 47
ctccggctcg gctctccagt 20

<210> 48
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 48
ccaaaaggat cctccccatt 20

<210> 49
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 49
accaaaaagga tcctcccat 20

<210> 50
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 50
cactgtctc ttgcagcgcg 20

<210> 51
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 51
agctccctct ttggttgacc 20

<210> 52
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 52
cgtcgagcac tgcctcttg 20

<210> 53
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 53
tccccatctt ctctgctct 20

<210> 54
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 54
tttctccccg ccctgcagcg 20

<210> 55
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 55
gtcgtggtct ttgctggtgg 20

<210> 56
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 56
ggtagcaagt ttctccccgc 20

<210> 57
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 57
aaccgtcctt cagatacagg 20

<210> 58
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 58
ccctccccat cttctcctgc 20

<210> 59
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 59
acagtcgtcg agcactgtcc 20

<210> 60
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 60
tttcaggcat tttcccgtcc 20

<210> 61
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 61
ttatcatgcc tcagatgttt 20

<210> 62
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 62
tttatcatgc ctcagatggt 20

<210> 63
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 63
ccccatcttc tcctgctctt 20

<210> 64
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 64
gcctcagatg tttgaaaacc 20

<210> 65
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 65
tatcatgcct cagatgtttg 20

<210> 66
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 66
agcactgtcc tcttgacgcg 20

<210> 67
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 67
ttcctcatta cgaggagacc 20

<210> 68
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 68
ggtcttcagc tttgcctagc 20

<210> 69
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 69
agtgggtaaa atacttctta 20

<210> 70
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 70
cctccggctc ggctctccag 20

<210> 71
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 71
gagcactgtc ctcttgacgc 20

<210> 72
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 72
ccctcttttg ttgacctgtc 20

<210> 73
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 73
gtgggtaaaa tacttcttag 20

<210> 74
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 74
caaaaggatc ctccccatta 20

<210> 75
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 75
ggcattttcc cgtccccctg 20

<210> 76
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 76
atttcaggca ttttcccgtc 20

<210> 77
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 77
caatattgcc atctccagat 20

<210> 78
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 78
ctagctccct ctttggttga 20

<210> 79
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 79
gctcattttt tgacattttt 20

<210> 80
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 80
ttctccccgc cctgcagcgc 20

<210> 81
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 81
ccccctcccc atcttctcct 20

<210> 82
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 82
tgctcatttt ttgacatttt 20

<210> 83
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 83
caccaaaagg atcctcccca 20

<210> 84
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 84
ttgctcattt tttgacattt 20

<210> 85
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 85
acaatattgc catctccaga 20

<210> 86
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 86
gggtaaaata cttcttagat 20

<210> 87
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 87
tgggtaaaat acttcttaga 20

<210> 88
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 88
aggcattttc ccgtccccct 20

<210> 89
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 89
cgagcactgt cctcttgcag 20

<210> 90
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 90
ggttactgaa tattggaaga 20

<210> 91
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 91
aaagttccta aaatggttggc 20

<210> 92
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 92
cggtcttcag ctttgcctag 20

<210> 93
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 93
tccccacccc tccccatcctt 20

<210> 94
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 94
cctcttttggt tgacctgtct 20

<210> 95
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 95
gccgtaggga cagtctttgc 20

<210> 96
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 96
tttcctcatt acgggagacc 20

<210> 97
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 97
acccccctccc catctttctcc 20

<210> 98
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 98
ctctccagtc gtggtctttg 20

<210> 99
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 99
tccccgccct gcagcgaca 20

<210> 100
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 100
atgacttgca ctaacacatt 20

<210> 101
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 101
aatttcaggc attttcccgt 20

<210> 102
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 102
tctccccgcc ctgcagcgca 20

<210> 103
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 103
ttcaggcatt ttcccgcccc 20

<210> 104
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 104
ccagtgggta aaatacttct 20

<210> 105
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 105
gtccttcaga tacaggtaac 20

<210> 106
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 106
ctgctgaaaa ttgattcttc 20

<210> 107
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 107
ctctcacaat attgccatct 20

<210> 108
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 108
ggatgttatg gattgtaagt 20

<210> 109
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 109
gcggtcttca gctttgccta 20

<210> 110
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 110
gacttgcaact aacacattta 20

<210> 111
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 111
tgacttgcaac taacacattt 20

<210> 112
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 112
ccccagaacc gtccttcaga 20

<210> 113
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 113
ggtaaaatac ttcttagatt 20

<210> 114
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 114
actgtcctct tgcagcgcg 20

<210> 115
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 115
caggtctctc tgcaatccat 20

<210> 116
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 116
aagttcctaa aatggtggct 20

<210> 117
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 117
ggattgtaag tatcctactt 20

<210> 118
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 118
gttatggatt gtaagtatcc 20

<210> 119
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 119
tgcggtcttc agctttgcct 20

<210> 120
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 120
ctgcggtctt cagctttgcc 20

<210> 121
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 121
cagtgggtaa aatacttctt 20

<210> 122
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 122
tcttcagctt tgcctagctc 20

<210> 123
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 123
cctctgttgc tcattttttg 20

<210> 124
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 124
tcgtggtcct tgctggtggg 20

<210> 125
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 125
gcattttccc gtccccctgt 20

<210> 126
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 126
gaaagttcct aaaatgttgg 20

<210> 127
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 127
gaaccgtcct tcagatacag 20

<210> 128
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 128
ctcatttttt gacatttttt 20

<210> 129
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 129
gctgaaaatt gattcttctt

20

<210> 130
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 130
attcacaact ctgttgcca

20

<210> 131
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 131
cacagtcgtc gagcactgtc

20

<210> 132
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 132
ttcctatgcc ccagaaccgt

20

<210> 133
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 133
tgctgaaaat tgattcttct

20

<210> 134
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 134
tctgctgaaa attgattctt 20

<210> 135
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 135
ttctgctgaa aattgattct 20

<210> 136
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 136
tggattgtaa gtatcctact 20

<210> 137
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 137
tcttttggtg acctgtctcc 20

<210> 138
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 138
ctccctcttt gggtgacctg 20

<210> 139
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 139
ccaccccctc cccatcttct

20

<210> 140
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 140
tgcctcagat gtttgaaaac

20

<210> 141
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 141
cccctcccca tcttctcctg

20

<210> 142
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 142
ctccccacccc ctccccatct

20

<210> 143
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 143
ccctctgttg ctcatttttt

20

<210> 144
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 144
cgtggtcttt gctggtggga

20

<210> 145
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 145
gtaagtatcc tactttttgt

20

<210> 146
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 146
tatggatggt atggattgta

20

<210> 147
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 147
cacccctcc ccattttctc

20

<210> 148
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 148
ccactccac cccctcccca

20

<210> 149
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 149
ccttcagata caggtaaccc 20

<210> 150
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 150
acagtcctgt ttgtgctaag 20

<210> 151
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 151
cagcagccac agtcgtcgag 20

<210> 152
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 152
ctcttttggtt gacctgtctc 20

<210> 153
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 153
tccctctttg gttgacctgt 20

<210> 154
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 154
cctcagatgt ttgaaaacct 20

<210> 155
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 155
gctccctctt tggttgacct 20

<210> 156
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 156
tcaccaaaag gatcctcccc 20

<210> 157
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 157
tctcacaata ttgccatctc 20

<210> 158
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 158
atttcctcat tacgggagac 20

<210> 159
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 159
ctagaaagtt cctaaaatgt 20

<210> 160
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 160
gtaaaataact tcttagattt 20

<210> 161
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 161
gttgctcatt ttttgacatt 20

<210> 162
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 162
tcgagcactg tcctcttgca 20

<210> 163
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 163
atcctcccca ttagaaggct 20

<210> 164
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 164
gcaggtctct ctgcaatcca 20

<210> 165
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 165
tcaggcattt tcccgtcccc 20

<210> 166
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 166
tggatgttat ggattgtaag 20

<210> 167
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 167
atggatgtta tggattgtaa 20

<210> 168
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 168
cccactccca cccctcccc 20

<210> 169
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 169
cagtcctggt tgtgctaaga 20

<210> 170
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 170
gatcctcccc attagaaggc 20

<210> 171
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 171
tgccgtaggg acagtctttg 20

<210> 172
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 172
atatggatgt tatggattgt 20

<210> 173
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 173
cggtagcaag tttctccccg 20

<210> 174
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 174
ggatcctccc cattagaagg 20

<210> 175
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 175
ctcacaatat tgccatctcc 20

<210> 176
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 176
cccattcttct cctgctctta 20

<210> 177
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 177
tccttcagat acaggtaacc 20

<210> 178
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 178
tcctatgccc cagaaccgtc 20

<210> 179
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 179
ccgcataatt attgctccag 20

<210> 180
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 180
gattgtaagt atcctacttt 20

<210> 181
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 181
atggattgta agtatacctac 20

<210> 182
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 182
gatggttatgg attgtaagta 20

<210> 183
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 183
ttgaaaattc accgaagtca 20

<210> 184
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 184
gttactgaat attggaagaa 20

<210> 185
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 185
agaaagttcc taaaatgttg 20

<210> 186
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 186
ttatggattg taagtatcct 20

<210> 187
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 187
tagctccctc tttggttgac 20

<210> 188
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 188
cccagaaccg tccttcagat 20

<210> 189
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 189
tttcctatgc cccagaaccg 20

<210> 190
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 190
acttgcaacta acacatttat 20

<210> 191
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 191
gggccctctg ttgctcattt 20

<210> 192
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 192
gttggaagac ttgggtactg 20

<210> 193
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 193
attgtaagta tcctactttt 20

<210> 194
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 194
tgttatggat tgtaagtatc

20

<210> 195
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 195
cttcattcca tatcccaaca

20

<210> 196
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 196
ctctgttgct cattttttga

20

<210> 197
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 197
aggtcctct gttgctcatt

20

<210> 198
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 198
ttcacccaag tcacagcact

20

<210> 199
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 199
cattcacaaac tctgttggcc 20

<210> 200
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 200
gtatcttggtt cttttttatt 20

<210> 201
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 201
cttcagcttt gcctagctcc 20

<210> 202
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 202
catgcctcag atgtttgaaa 20

<210> 203
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 203
tttctgctga aaattgattc 20

<210> 204
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 204
atctagtaca acagtcctgt 20

<210> 205
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 205
tagaaagttc ctaaaatgtt 20

<210> 206
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 206
tctagaaagt tcctaaaatg 20

<210> 207
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 207
atctagaaag ttcctaaaat 20

<210> 208
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 208
ttgtaagtat cctacttttt 20

<210> 209
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 209
ctttggttga cctgtctcca 20

<210> 210
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 210
actcccaccc cctccccatc 20

<210> 211
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 211
atgcctcaga tgtttgaaaa 20

<210> 212
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 212
tcatgcctca gatgtttgaa 20

<210> 213
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 213
attgattctt cttttacaaa 20

<210> 214
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 214
agcagccaca gtcgtcgagc 20

<210> 215
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 215
gaatttcagg cattttcccg 20

<210> 216
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 216
tggttactga atattggaag 20

<210> 217
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 217
aatctgttgg aagacttggt 20

<210> 218
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 218
attgccatct ccagatgcca 20

<210> 219
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 219
aatattgccca tctccagatg 20

<210> 220
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 220
tctctcaciaa tattgccatc 20

<210> 221
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 221
tgtaagtatc ctactttttg 20

<210> 222
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 222
tatggattgt aagtatccta 20

<210> 223
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 223
actgcggtct tcagctttgc 20

<210> 224
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 224
cccaccccct ccccatcttc 20

<210> 225
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 225
gatgacttgc actaacacat 20

<210> 226
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 226
atTTTTTgac atTTTTTgaa 20

<210> 227
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 227
tccctctgtt gtcattttt 20

<210> 228
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 228
gcagcagcca cagtcgtcga 20

<210> 229
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 229
aggtctctct gcaatccatc 20

<210> 230
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 230
atctgttgga agacttggtt 20

<210> 231
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 231
atggttatgga ttgtaagtat 20

<210> 232
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 232
ctgaaaattg attcttcttt 20

<210> 233
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 233
tacaacagtc ctgtttgtgc 20

<210> 234
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 234
tgctccaggc ggccaccagg 20

<210> 235
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 235
ccccgccctg cagcgcacac 20

<210> 236
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 236
cttggttact gaatattgga 20

<210> 237
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 237
ttgccatctc cagatgccat 20

<210> 238
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 238
tatctagaaa gttcctaaaa 20

<210> 239
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 239
attgaaaatt caccgaagtc 20

<210> 240
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 240
cgcataatta ttgctccagg 20

<210> 241
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 241
ttggaagact tggttactga 20

<210> 242
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 242
tgctatatct agaaagttcc 20

<210> 243
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 243
atTTTTtagtt cttcagtggt 20

<210> 244
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 244
tcaccgaagt cacagcactt 20

<210> 245
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 245
tgaaaattca ccgaagtcac 20

<210> 246
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 246
tccatcccga aggtgccgta 20

<210> 247
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 247
tctgttgga gacttggtta 20

<210> 248
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 248
agaaccgtcc ttcagataca 20

<210> 249
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 249
aaaatacttc ttagatttat 20

<210> 250
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 250
caccgaagtc acagcactta 20

<210> 251
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 251
ttgattcttc ttttacaaac 20

<210> 252
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 252
gttttctgct gaaaattgat 20

<210> 253
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 253
tgttttctgc tgaaaattga 20

<210> 254
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 254
aacagtcctg tttgtgctaa 20

<210> 255
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 255
agttcctaaa atgttggtg 20

<210> 256
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 256
ttcagtcata tggatgttat 20

<210> 257
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 257
cctgctctta agtcttcatt 20

<210> 258
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 258
gccccagaac cgtccttcag 20

<210> 259
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 259
accagtgggt aaaataacttc 20

<210> 260
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 260
atcatgcctc agatgtttga 20

<210> 261
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 261
aaggtccctc tgttgctcat 20

<210> 262
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 262
actgctgtca cagtgttgag 20

<210> 263
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 263
ccacagtcgt cgagcactgt 20

<210> 264
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 264
ctccccgccc tgcagcgcac 20

<210> 265
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 265
gtgccgtagg gacagtcttt 20

<210> 266
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 266
tgcaggtctc tctgcaatcc 20

<210> 267
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 267
tgttggaaga cttggttact 20

<210> 268
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 268
ctgttggaag acttggttac 20

<210> 269
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 269
attgcatttt tagttcttca 20

<210> 270
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 270
tcattccata tcccaacatt 20

<210> 271
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 271
ttcattccat atcccaacat 20

<210> 272
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 272
cttgactaa cacatttatt 20

<210> 273
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 273
tctagtacaa cagtcctgtt 20

<210> 274
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 274
ttccacacac attcacaact 20

<210> 275
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 275
ctgtcctctt gcagcgcggg 20

<210> 276
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 276
aaaaggatcc tccccattag 20

<210> 277
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 277
gttcctaataa tggttggtgt 20

<210> 278
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 278
atcctacttt ttgttttctg 20

<210> 279
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 279
tcagtcatat ggatggttatg 20

<210> 280
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 280
atgccccaga accgtccttc 20

<210> 281
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 281
taaaatactt cttagattta 20

<210> 282
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 282
gaaaattcac cgaagtcaca 20

<210> 283
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 283
gtacaacagt cctgtttgtg 20

<210> 284
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 284
gcataattat tgctccaggc 20

<210> 285
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 285
atccatcccg aaggtgccgt 20

<210> 286
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 286
catatggatg ttatggattg 20

<210> 287
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 287
atttcccact cccaccccct 20

<210> 288
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 288
taaggtccct ctggtgctca 20

<210> 289
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 289
acaataataa acatgtcctt 20

<210> 290
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 290
ttggttactg aatattggaa 20

<210> 291
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 291
cttctctcac aatattgcca 20

<210> 292
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 292
atatctagaa agttcctaaa 20

<210> 293
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 293
gcatttttag ttcttcagtg 20

<210> 294
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 294
ggttgacctg tctccatgta 20

<210> 295
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 295
agatgacttg cactaacaca 20

<210> 296
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 296
gggaagatga cttgcactaa 20

<210> 297
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 297
tgttgctcat tttttgacat 20

<210> 298
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 298
tgaaaattga ttcttctttt 20

<210> 299
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 299
acaacagtcc tgtttggtgct 20

<210> 300
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 300
ttcacaaactc tgttggccaa 20

<210> 301
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 301
caataataaa catgtccttt 20

<210> 302
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 302
gtgttcagtc atatggatgt 20

<210> 303
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 303
tttttagttc ttcagtgta 20

<210> 304
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 304
gtcttcagct ttgcctagct 20

<210> 305
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 305
tcccactccc accccctccc 20

<210> 306
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 306
ttttctgctg aaaattgatt 20

<210> 307
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 307
atgttttctg ctgaaaattg 20

<210> 308
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 308
ctagtacaac agtcctgttt 20

<210> 309
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 309
ggaagacttg gttactgaat 20

<210> 310
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 310
tggaagactt gggtactgaa 20

<210> 311
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 311
atattgccat ctccagatgc 20

<210> 312
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 312
tggttgacct gtctccatgt 20

<210> 313
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 313
catctagtag aacagtcctg 20

<210> 314
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 314
accgcataat tattgctcca 20

<210> 315
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 315
tatatctaga aagttcctaa 20

<210> 316
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 316
gttttttattc taaccatttt 20

<210> 317
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 317
aaatttatca tgcctcagat 20

<210> 318
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 318
ttttttgaca ttttttgaaa 20

<210> 319
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 319
agtcctgttt gtgctaagat 20

<210> 320
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 320
ttgctccagg cggccaccag 20

<210> 321
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 321
attgctccag gcggccacca 20

<210> 322
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 322
aaagatcct cccattaga 20

<210> 323
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 323
ttctctcaca atattgcat 20

<210> 324
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 324
ccatcttctc ctgctcttaa 20

<210> 325
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 325
atacttctta gatttatctc 20

<210> 326
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 326
accaccagtg ggtaaaatac 20

<210> 327
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 327
ctccaggcgg ccaccaggtg 20

<210> 328
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 328
cactgctgtc acagtgttga 20

<210> 329
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 329
ggctctctctg caatccatcc 20

<210> 330
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 330
ctatatctag aaagttccta 20

<210> 331
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 331
catttttagt tcttcagtg 20

<210> 332
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 332
ctcaaatttc cataagcttc 20

<210> 333
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 333
tatgccccag aaccgtcctt 20

<210> 334
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 334
gtttcctatg ccccagaacc 20

<210> 335
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 335
atztatcatg cctcagatgt 20

<210> 336
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 336
gctccaggcg gccaccaggt 20

<210> 337
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 337
ggcagcagcc acagtcgtcg 20

<210> 338
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 338
caggcatttt cccgtcccc 20

<210> 339
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 339
gttcagtcac atggatgtta 20

<210> 340
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 340
caagtgttca gtcatatgga 20

<210> 341
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 341
cattccatat cccaacatta 20

<210> 342
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 342
ggtagggaag atgacttgca 20

<210> 343
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 343
taaatttatc atgcctcaga 20

<210> 344
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 344
ttttgacatt ttttgaaatc 20

<210> 345
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 345
aataataaac atgtcctttt 20

<210> 346
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 346
aggatcctcc ccattagaag 20

<210> 347
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 347
gatccaccat gcatcacaat 20

<210> 348
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 348
gtcatatgga tggtatggat 20

<210> 349
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 349
cactgcggtc ttcagctttg 20

<210> 350
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 350
actcaaattt ccataagctt 20

<210> 351
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 351
cctatgcccc agaaccgtcc 20

<210> 352
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 352
agggaagatg acttgacta 20

<210> 353
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 353
aacaataata aacatgtcct 20

<210> 354
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 354
ccaccatgca tcacaatttg 20

<210> 355
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 355
agtatcctac tttttgtttt 20

<210> 356
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 356
ttccatatcc caacattaat 20

<210> 357
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 357
attccatatc ccaacattaa 20

<210> 358
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 358
ttttgacttt tcccaaagcc 20

<210> 359
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 359
ctatgccccca gaaccgctcct

20

<210> 360
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 360
tttttgacat tttttgaaat

20

<210> 361
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 361
catttttttga catttttttga

20

<210> 362
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 362
gtcctggttg tgctaagatt

20

<210> 363
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 363
ataataaaca tgccttttta

20

<210> 364
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 364
gtggtccttg ctggtgggaa

20

<210> 365
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 365
ttcaccaaaa ggatcctccc

20

<210> 366
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 366
acttggttac tgaatattgg

20

<210> 367
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 367
tcacaatatt gccatctcca

20

<210> 368
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 368
ttacgggaga cccggcagca

20

<210> 369
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 369
tactttcttag atttatctct

20

<210> 370
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 370
tcagatgttt gaaaacctta

20

<210> 371
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 371
gattcttctt ttacaaacct

20

<210> 372
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 372
tgattcttct ttacaaacc

20

<210> 373
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 373
ccatcccgaa ggtgccgtag

20

<210> 374
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 374
catttcctca ttacgggaga

20

<210> 375
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 375
acaagtgttc agtcatatgg

20

<210> 376
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 376
ttgcattttt agttcttcag

20

<210> 377
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 377
ggaagatgac ttgcactaac

20

<210> 378
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 378
tcattttttg acattttttg

20

<210> 379
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 379
acattcacaa ctctgttggc

20

<210> 380
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 380
gaacaataat aaacatgtcc

20

<210> 381
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 381
gtatcctact ttttgttttc

20

<210> 382
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 382
taagtatcct actttttgtt

20

<210> 383
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 383
agtgttcagt catatggatg

20

<210> 384
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 384
tcctgctctt aagtcttcat 20

<210> 385
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 385
tatttcccac tcccaccccc 20

<210> 386
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 386
gggggttttct gggttgtttta 20

<210> 387
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 387
tactcaaatt tccataagct 20

<210> 388
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 388
cagaaccgtc cttcagatac 20

<210> 389
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 389
ttttttattct aaccatttttc 20

<210> 390
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 390
caacagtcct gtttgtgcta 20

<210> 391
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 391
ccctgcagcg cacactcggc 20

<210> 392
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 392
aaggatcctc cccattagaa 20

<210> 393
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 393
gagccttctc tcagaaatca 20

<210> 394
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 394
cacatacaag tgttcagtc

20

<210> 395
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 395
gttcttcagt gttactatac

20

<210> 396
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 396
ttttagttct tcagtggtac

20

<210> 397
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 397
ccatatccca acattaatgt

20

<210> 398
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 398
ctgctcttaa gtcttcattc

20

<210> 399
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 399
ttttgaaatt gctctcagtt 20

<210> 400
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 400
ataaatttat catgcctcag 20

<210> 401
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 401
gaaaattgat tcttctttta 20

<210> 402
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 402
cacattcaca actctggttg 20

<210> 403
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 403
tcactgctgt cacagtgttg 20

<210> 404
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 404
gctatatcta gaaagttcct

20

<210> 405
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 405
aagtgttcag tcatatggat

20

<210> 406
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 406
tttagttctt cagtgttact

20

<210> 407
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 407
cccaacatta atgtacatca

20

<210> 408
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 408
tcccaacatt aatgtacatc

20

<210> 409
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 409
gtttttatttt gacttttccc

20

<210> 410
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 410
aaatacttct tagatttctc

20

<210> 411
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 411
ccaccagtgg gtaaaatact

20

<210> 412
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 412
aaccaccagt gggtaaaata

20

<210> 413
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 413
gagtcataagg tttttattct

20

<210> 414
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 414
agatgtttga aaaccttata 20

<210> 415
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 415
gtccctctgt tgctcatttt 20

<210> 416
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 416
aattgaaaat tcaccgaagt 20

<210> 417
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 417
acatctagta caacagtcct 20

<210> 418
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 418
tattgctcca ggcggccacc 20

<210> 419
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 419
ctgacacctc agccccgggc 20

<210> 420
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 420
cacaatattg ccatctccag 20

<210> 421
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 421
atgctatatc tagaaagttc 20

<210> 422
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 422
aagtatccta ctttttgttt 20

<210> 423
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 423
agttcttcag tgttactata 20

<210> 424
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 424
tagttcttca gtgttactat 20

<210> 425
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 425
tccatatccc aacattaatg 20

<210> 426
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 426
cactcccacc ccctcccat 20

<210> 427
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 427
gggttttctg gttgttttat 20

<210> 428
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 428
tgaaattgct ctcagttcaa 20

<210> 429
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 429
tcttaaataa gttcttcact

20

<210> 430
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 430
ctgctgtcac agtggtgagg

20

<210> 431
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 431
ggtgccgtag ggacagtctt

20

<210> 432
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 432
agacttggtt actgaatatt

20

<210> 433
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 433
agccttctct cagaaatcac

20

<210> 434
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 434
ttggttgacc tgtctccatg 20

<210> 435
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 435
tttgttactc aaatttccat 20

<210> 436
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 436
gaagatgact tgcactaaca 20

<210> 437
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 437
aatattatcat gcctcagatg 20

<210> 438
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 438
tccacacaca ttcacaactc 20

<210> 439
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 439
gtctctctgc aatccatccc

20

<210> 440
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 440
ttactgaata ttggaagaag

20

<210> 441
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 441
attacgggag acccggcagc

20

<210> 442
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 442
tcatatggat gttatggatt

20

<210> 443
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 443
tttggttgac ctgtctccat

20

<210> 444
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 444
tttgaaattg ctctcagttc 20

<210> 445
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 445
gtagggaaga tgacttgcac 20

<210> 446
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 446
ttttattcta accattttca 20

<210> 447
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 447
ataggttttt attctaacca 20

<210> 448
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 448
gctgacacct cagccccggg 20

<210> 449
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 449
agttgcaggt ctctctgcaa

20

<210> 450
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 450
cattttcccg tccccctgtc

20

<210> 451
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 451
gaagacttgg ttactgaata

20

<210> 452
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 452
tgccatctcc agatgccatg

20

<210> 453
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 453
tcttctctca caatattgcc

20

<210> 454
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 454
tcactgcggt cttcagcttt 20

<210> 455
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 455
ttgaaattgc tctcagttca 20

<210> 456
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 456
cttcagatac aggtaaccgc 20

<210> 457
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 457
tgccccagaa ccgtccttca 20

<210> 458
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 458
caccagtggg taaaatactt 20

<210> 459
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 459
aaaccaccag tgggtaaaat

20

<210> 460
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 460
accgaagtca cagcacttat

20

<210> 461
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 461
agtacaacag tcctgtttgt

20

<210> 462
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 462
tccaggcggc caccaggtgt

20

<210> 463
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 463
gcactcactg ctgtcacagt

20

<210> 464
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 464
tgtcctcttg cagcgcgggc 20

<210> 465
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 465
gcggtagcaa gtttctcccc 20

<210> 466
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 466
catacaagtg ttcagtcata 20

<210> 467
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 467
acatacaagt gttcagtcac 20

<210> 468
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 468
gacctgtctc catgtaagat 20

<210> 469
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 469
tgacctgtct ccatgtaaga 20

<210> 470
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 470
ctcctgctct taagtcttca 20

<210> 471
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 471
ttttattttg acttttccca 20

<210> 472
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 472
gttcaaagct gtttggtact 20

<210> 473
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 473
taggttttta ttctaaccat 20

<210> 474
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 474
ccacacacat tcacaactct

20

<210> 475
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 475
caccgcataa ttattgctcc

20

<210> 476
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 476
gccacagtcg tcgagcactg

20

<210> 477
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 477
gtctttgcag ataccaaact

20

<210> 478
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 478
gttgcaggtc tctctgcaat

20

<210> 479
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 479
aaatctgttg gaagacttgg 20

<210> 480
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 480
ggttttctgg ttgttttatt 20

<210> 481
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 481
ttgcactaac acattttattt 20

<210> 482
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 482
tagggaagat gacttgact 20

<210> 483
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 483
ctcagatgtt tgaaaacctt 20

<210> 484
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 484
cctgcagcgc acactcggca

20

<210> 485
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 485
cccgccctgc agcgcacact

20

<210> 486
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 486
cccggcagca ttctctttca

20

<210> 487
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 487
tacgggagac ccggcagcat

20

<210> 488
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 488
aattgcattt ttagttcttc

20

<210> 489
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 489
ttcccactcc caccctctcc

20

<210> 490
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 490
tcaaagctgt ttgttactca

20

<210> 491
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 491
aaccttatag agtcataagg

20

<210> 492
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 492
ctgttgcaca ttttttgaca

20

<210> 493
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 493
ccatgcctga gactgtgcgg

20

<210> 494
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 494
cctccccatt agaaggctga

20

<210> 495
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 495
tattgccatc tccagatgcc

20

<210> 496
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 496
tatgctatat ctagaaagtt

20

<210> 497
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 497
ttatgctata tctagaaagt

20

<210> 498
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 498
tatactactt tttgttttct

20

<210> 499
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 499
cagtcatatg gatggttatgg

20

<210> 500
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 500
tgcatttttta gttcttcagt

20

<210> 501
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 501
cactaacaca tttattttata

20

<210> 502
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 502
cagatgtttg aaaaccttat

20

<210> 503
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 503
tttgacattt tttgaaatcc

20

<210> 504
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 504
acacattcac aactctgttg 20

<210> 505
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 505
attattgctc caggcggcca 20

<210> 506
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 506
cttcaccaaa aggatcctcc 20

<210> 507
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 507
acaaatctgt tggaagactt 20

<210> 508
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 508
gccttctctc agaaatcaca 20

<210> 509
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 509
ttgttactca aatttccata

20

<210> 510
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 510
gtttgttact caaatttcca

20

<210> 511
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 511
aatacttctt agatttatct

20

<210> 512
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 512
aattcaccca agtcacagca

20

<210> 513
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 513
ttcttaaata agttcttcac

20

<210> 514
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 514
cacacattca caactctgtt

20

<210> 515
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 515
tccatgcctg agactgtgcg

20

<210> 516
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 516
tcctcccat tagaaggctg

20

<210> 517
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 517
ggaatttcag gcattttccc

20

<210> 518
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 518
aagacttggt tactgaatat

20

<210> 519
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 519
ccatttcctc attacgggag 20

<210> 520
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 520
gttgacctgt ctccatgtaa 20

<210> 521
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 521
tgctcttaag tcttcattcc 20

<210> 522
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 522
aactacatca gcagcctttt 20

<210> 523
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 523
cagatacagg taacccggga 20

<210> 524
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 524
tcagatacag gtaacccggg 20

<210> 525
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 525
aggtttttat tctaaccatt 20

<210> 526
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 526
cttatagagt cataggtttt 20

<210> 527
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 527
aataagttct tcacttcaaa 20

<210> 528
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 528
caaattctgtt ggaagacttg 20

<210> 529
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 529
cttatgctat atctagaaag 20

<210> 530
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 530
ggttttttatt ctaaccattt 20

<210> 531
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 531
aataaattta tcatgcctca 20

<210> 532
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 532
tcttctttta caaacctcct 20

<210> 533
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 533
ttcttctttt acaaacctcc 20

<210> 534
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 534
attctttaa at aagttcttca

20

<210> 535
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 535
ccgccctgca gcgcacactc

20

<210> 536
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 536
cagttgcagg tctctctgca

20

<210> 537
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 537
ttcacaaactt cttctctcac

20

<210> 538
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 538
caccatgcat cacaatttgg

20

<210> 539
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 539
tccaccatgc atcacaattt
20

<210> 540
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 540
tgttcagtca tatggatggt
20

<210> 541
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 541
tacaagtgtt cagtcatatg
20

<210> 542
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 542
atacaagtgt tcagtcatat
20

<210> 543
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 543
agtcttcatt ccatatccca
20

<210> 544
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 544
gactttttccc aaagccaaaa

20

<210> 545
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 545
tcaaatttcc ataagcttca

20

<210> 546
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 546
caaagctggt tggtactcaa

20

<210> 547
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 547
aaaattcacc gaagtcacag

20

<210> 548
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 548
cagcagcaag acgctcttca

20

<210> 549
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 549
caggcggcca ccaggtgtgc 20

<210> 550
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 550
aatccatccc gaaggtgccg 20

<210> 551
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 551
tcattacggg agacccggca 20

<210> 552
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 552
gttttctgga tccaccatgc 20

<210> 553
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 553
ttgacctgtc tccatgtaag 20

<210> 554
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 554
tttattttga cttttcccaa 20

<210> 555
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 555
aggggttttc tggttgtttt 20

<210> 556
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 556
ttcaaagctg tttgttactc 20

<210> 557
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 557
ccagaaccgt ccttcagata 20

<210> 558
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 558
attcacccgaa gtcacagcac 20

<210> 559
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 559
aaattcaccg aagtcacagc

20

<210> 560
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 560
ccttaaattg aaaattcacc

20

<210> 561
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 561
catgttttct gctgaaaatt

20

<210> 562
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 562
ccttccacac acattcacaa

20

<210> 563
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 563
tcagcagcaa gacgctcttc

20

<210> 564
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 564
gtcacagtgt tgagggcagt 20

<210> 565
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 565
ctcttcacca aaaggatcct 20

<210> 566
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 566
gccatctcca gatgccatgt 20

<210> 567
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 567
ggatccacca tgcatacaaa 20

<210> 568
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 568
agttcaaagc tgtttggtac 20

<210> 569
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 569
ccttatagag tcataggttt 20

<210> 570
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 570
gttcttcact tcaaataaaa 20

<210> 571
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 571
ttgagggcag tccaccgcat 20

<210> 572
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 572
agtctttgca gataccaaac 20

<210> 573
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 573
catatcccaa cattaatgta 20

<210> 574
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 574
aagtcttcat tccatatccc 20

<210> 575
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 575
cttctcctgc tcttaagtct 20

<210> 576
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 576
atatttatttc ccactcccac 20

<210> 577
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 577
attttgactt ttcccaaagc 20

<210> 578
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 578
cttccacaca cattcacaac 20

<210> 579
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 579
gtcctcttgc agcgcgggct 20

<210> 580
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 580
catgcctgag actgtgcggt 20

<210> 581
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 581
ttttctggat ccaccatgca 20

<210> 582
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 582
ttcttcagtg ttactataca 20

<210> 583
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 583
atcccaacat taatgtacat 20

<210> 584
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 584
gaaattgctc tcagttcaaa 20

<210> 585
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 585
tcttagattt atctctgagg 20

<210> 586
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 586
gggtagggaa gatgacttgc 20

<210> 587
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 587
acatgttttc tgctgaaaat 20

<210> 588
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 588
taataaacat gtccttttaa 20

<210> 589
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 589
ccagctgcct ccggctcggc 20

<210> 590
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 590
agcaagacgc tcttcattgtt 20

<210> 591
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 591
aggcggccac caggtgtgca 20

<210> 592
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 592
ccaccgcata attattgctc 20

<210> 593
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 593
actcttcacc aaaaggatcc 20

<210> 594
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 594
ttattttccca ctccccacccc 20

<210> 595
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 595
gtgtatgtgt ttcctatgcc 20

<210> 596
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 596
aaaccttata gagtcatagg 20

<210> 597
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 597
aaattgaaaa ttcaccgaag 20

<210> 598
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 598
attcttcttt tacaaacctc 20

<210> 599
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 599
tgaacaataa taaacatgtc

20

<210> 600
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 600
cataattatt gctccaggcg

20

<210> 601
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 601
ttagttcttc agtggtacta

20

<210> 602
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 602
ctcactgcgg tcttcagctt

20

<210> 603
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 603
ttatagagtc atagggtttt

20

<210> 604
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 604
ttgacatttt ttgaaatcca 20

<210> 605
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 605
cttaaattga aaattcaccg 20

<210> 606
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 606
tgagggcagt ccaccgata 20

<210> 607
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 607
agggtgccgta gggacagtct 20

<210> 608
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 608
accatttcct cattacggga 20

<210> 609
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 609
ttctctcaga aatcacagcc 20

<210> 610
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 610
agagccttct ctcagaaatc 20

<210> 611
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 611
tagagccttc tctcagaaat 20

<210> 612
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 612
tttctggatc caccatgcat 20

<210> 613
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 613
tgtttgttac tcaaatttcc 20

<210> 614
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 614
gaactacatc agcagccttt 20

<210> 615
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 615
atacaggtaa cccgggaact 20

<210> 616
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 616
caaaccacca gtgggtaaaa 20

<210> 617
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 617
tattctaacc attttcaaca 20

<210> 618
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 618
cggcagcagc cacagtcgtc 20

<210> 619
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 619
ccgtagggac agtcttttgca

20

<210> 620
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 620
atatttcccgt ccccctgtca

20

<210> 621
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 621
acgggagacc cggcagcatt

20

<210> 622
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 622
atccaccatg catcacaatt

20

<210> 623
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 623
tcttctcctg ctcttaagtc

20

<210> 624
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 624
tgttttatatt tgacttttcc

20

<210> 625
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 625
tccttcagggt gttttctggt

20

<210> 626
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 626
acccgggaac tacatcagca

20

<210> 627
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 627
taaattgaaa attcaccgaa

20

<210> 628
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 628
tcacaactct gttggccaac

20

<210> 629
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 629
ttgaacaata ataaacatgt

20

<210> 630
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 630
tccaccgcat aattattgct

20

<210> 631
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 631
ctcactgctg tcacagtgtt

20

<210> 632
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 632
ttgcaggtct ctctgcaatc

20

<210> 633
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 633
cacgaaaata gagccttctc

20

<210> 634
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 634
tcttaagtct tcattccata 20

<210> 635
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 635
tttcccactc ccaccccctc 20

<210> 636
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 636
taataaattt atcatgcctc 20

<210> 637
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 637
tatcttggtc ttttttattg 20

<210> 638
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 638
ccaggcggcc accaggtgtg 20

<210> 639
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 639
aattattgct ccaggcggcc 20

<210> 640
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 640
ttgcactcac tgctgtcaca 20

<210> 641
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 641
ctactttttg ttttctggat 20

<210> 642
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 642
aaccgggaa ctacatcagc 20

<210> 643
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 643
gatacaggta acccggaac 20

<210> 644
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 644
actaacacat ttatttataa 20

<210> 645
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 645
tgcactaaca catttattta 20

<210> 646
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 646
aacatctagt acaacagtcc 20

<210> 647
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 647
actctgttgg ccaacttcaa 20

<210> 648
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 648
gcctccggct cggtcttcca 20

<210> 649
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 649
tgcactcact gctgtcacag 20

<210> 650
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 650
tttcacaact tcttctctca 20

<210> 651
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 651
tctctcagaa atcacagccg 20

<210> 652
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 652
gaaaatagag ccttctctca 20

<210> 653
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 653
tcacgaaaat agagccttct 20

<210> 654
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 654
acttatgcta tatctagaaa

20

<210> 655
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 655
tatttttattt cccactccca

20

<210> 656
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 656
atttctaacca ttttcaacaa

20

<210> 657
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 657
cataggtttt tattctaacc

20

<210> 658
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 658
ataagttctt cacttcaaatt

20

<210> 659
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 659
gccttccaca cacattcaca

20

<210> 660
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 660
tcttcaccaa aaggatcctc

20

<210> 661
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 661
gcagttgcag gtctctctgc

20

<210> 662
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 662
aacaaatctg ttggaagact

20

<210> 663
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 663
cgaaaataga gccttctctc

20

<210> 664
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 664
agatacaggt aaccgggaa

20

<210> 665
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 665
aagatgactt gcactaacac

20

<210> 666
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 666
ttaaattgaa aattcaccga

20

<210> 667
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 667
aaattgattc ttcttttaca

20

<210> 668
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 668
ttttgcactc actgctgtca

20

<210> 669
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 669
tctctctgca atccatcccg

20

<210> 670
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 670
tactgaatat tggaagaagg

20

<210> 671
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 671
cttaagtctt cattccatat

20

<210> 672
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 672
atattttatt tcccactccc

20

<210> 673
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 673
actttttcca aagccaaaaa

20

<210> 674
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 674
cttttgaaat tgctctcagt 20

<210> 675
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 675
acttcttaga tttatctctg 20

<210> 676
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 676
ataataaatt tatcatgcct 20

<210> 677
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 677
atcttggttct tttttattga 20

<210> 678
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 678
gagggcagtc caccgcataa 20

<210> 679
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 679
tgtcacagtg ttgagggcag 20

<210> 680
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 680
attagaaggc tgacacctca 20

<210> 681
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 681
ctccccatta gaaggctgac 20

<210> 682
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 682
gacttgggta ctgaatattg 20

<210> 683
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 683
tgcacacaa tttgatctt 20

<210> 684
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 684
tggatccacc atgcatcaca 20

<210> 685
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 685
actacatcag cagccttttg 20

<210> 686
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 686
tttattctaa ccattttcaa 20

<210> 687
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 687
ttgaaaacct tatagagtca 20

<210> 688
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 688
acattttttg aaatccagag 20

<210> 689
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 689
tagtacaaca gtcctgtttg 20

<210> 690
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 690
gctgtcacag tgttgagggc 20

<210> 691
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 691
atagagcctt ctctcagaaa 20

<210> 692
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 692
ttcctaaaat gttggctgtg 20

<210> 693
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 693
atgcatcaca atttgatct 20

<210> 694
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 694
ttattttgac ttttcccaaa 20

<210> 695
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 695
ccttcagggg ttttctggtt 20

<210> 696
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 696
tgttactcaa atttccataa 20

<210> 697
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 697
tgaaaacctt atagagtcac 20

<210> 698
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 698
tctgttgctc attttttgac 20

<210> 699
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 699
ctgtttgtgc taagattctt 20

<210> 700
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 700
ctctgttggc caacttcaag 20

<210> 701
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 701
gctgcctccg gctcggctct 20

<210> 702
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 702
ataattattg ctccaggcgg 20

<210> 703
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 703
tttgactca ctgctgtcac 20

<210> 704
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 704
gagaccggc agcattctct 20

<210> 705
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 705
cattacggga gaccggcag 20

<210> 706
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 706
gaactaattt gactcactgc 20

<210> 707
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 707
gtcttcattc catatcccaa 20

<210> 708
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 708
ttttatttcc cactcccacc 20

<210> 709
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 709
ccgaagtcac agcacttatg 20

<210> 710
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 710
ttattgctcc aggcggccac 20

<210> 711
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 711
ctcggcagca gccacagtcg 20

<210> 712
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 712
ggctgacacc tcagccccgg 20

<210> 713
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 713
ccttctctca gaaatcacag 20

<210> 714
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 714
catgcatcac aatttggatc

20

<210> 715
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 715
tactttttgt tttctggatc

20

<210> 716
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 716
cctacttttt gttttctgga

20

<210> 717
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 717
ctaccaagga agggctaaat

20

<210> 718
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 718
caggggtttt ctggttggtt

20

<210> 719
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 719
cacacaaacc accagtgggt 20

<210> 720
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 720
acacacattc acaactctgt 20

<210> 721
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 721
tgcctccggc tcggctctcc 20

<210> 722
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 722
ctcattacgg gagaccggc 20

<210> 723
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 723
tcctcattac gggagaccgg 20

<210> 724
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 724
tcctaaaatg ttggctgtgt

20

<210> 725
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 725
tatcccaaca ttaatgtaca

20

<210> 726
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 726
caaatttcca taagcttcaa

20

<210> 727
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 727
tgctctcagt tcaaagctgt

20

<210> 728
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 728
ttctaaccat tttcaacaaa

20

<210> 729
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 729
gaaaacctta tagagtcata 20

<210> 730
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 730
catttttttga aatccagagt 20

<210> 731
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 731
aaataagttc ttcacttcaa 20

<210> 732
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 732
tctggttgcc aacttcaaga 20

<210> 733
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 733
cagctgcctc cggctcggct 20

<210> 734
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 734
gggcagtcca ccgcataatt 20

<210> 735
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 735
gttgagggca gtccaccgca 20

<210> 736
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 736
ctgtcacagt gttgagggca 20

<210> 737
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 737
cttctctcag aaatcacagc 20

<210> 738
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 738
tgttttctgg atccaccatg 20

<210> 739
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 739
tcctactttt tgttttctgg
20

<210> 740
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 740
tttgactcac tgcggtcttc
20

<210> 741
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 741
agccttttga aattgctctc
20

<210> 742
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 742
tacaggtaac ccgggaacta
20

<210> 743
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 743
acacacaaac caccagtggg
20

<210> 744
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 744
tctaaccatt ttcaacaaat 20

<210> 745
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 745
agagtcatag gttttttattc 20

<210> 746
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 746
ttatgtttaa ataaggtccc 20

<210> 747
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 747
agggcagtcc accgcataat 20

<210> 748
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 748
tgcagatacc aaactcttca 20

<210> 749
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 749
ccaacattaa tgtacatcaa 20

<210> 750
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 750
atcttctcct gctcttaagt 20

<210> 751
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 751
ttgctctcag ttcaaagctg 20

<210> 752
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 752
gatgtttgaa aaccttatag 20

<210> 753
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 753
aaaattgatt cttcttttac 20

<210> 754
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 754
aataaacatg tcctttttaa

20

<210> 755
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 755
attgaacaat aataaacatg

20

<210> 756
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 756
ggcggccacc aggtgtgcag

20

<210> 757
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 757
ccatccatgc ctgagactgt

20

<210> 758
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 758
ttcttctctc acaatattgc

20

<210> 759
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 759
tttggttttct ggatccacca 20

<210> 760
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 760
tctcctgctc ttaagtcttc 20

<210> 761
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 761
catcttctcc tgctcttaag 20

<210> 762
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 762
ttttctgggtt gttttatattt 20

<210> 763
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 763
gctctcagtt caaagctgtt 20

<210> 764
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 764
cagccttttg aaattgctct 20

<210> 765
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 765
cccgggaact acatcagcag 20

<210> 766
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 766
tgtttcctat gccccagaac 20

<210> 767
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 767
tcaaataac tcctaattcc 20

<210> 768
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 768
gtcagcagca agacgctctt 20

<210> 769
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 769
atgttggtgctg tgtgttgaac 20

<210> 770
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 770
tacttatgct atatctagaa 20

<210> 771
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 771
gattacctaa attgcatttt 20

<210> 772
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 772
tatttttgact tttcccaaag 20

<210> 773
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 773
ttcagatata ggtaaccg 20

<210> 774
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 774
tcctgtttgt gctaagattc 20

<210> 775
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 775
tgtcctttta aaacaaaacc 20

<210> 776
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 776
actcactgct gtcacagtgt 20

<210> 777
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 777
ttttgttttc tggatccacc 20

<210> 778
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 778
aaattgcatt tttagttcctt 20

<210> 779
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 779
agattaccta aattgcattt 20

<210> 780
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 780
ctgtctccat gtaagattac 20

<210> 781
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 781
atttgactca ctgcggtctt 20

<210> 782
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 782
gttttctggt tgttttattt 20

<210> 783
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 783
tgtatgtggt tcctatgccc 20

<210> 784
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 784
gcactaacac atttatttat 20

<210> 785
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 785
tgtttgtgct aagattcttt 20

<210> 786
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 786
tattgaacaa taataaacat 20

<210> 787
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 787
atccatgcct gagactgtgc 20

<210> 788
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 788
gaaacaaatc tgttggaaga 20

<210> 789
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 789
gagaaacaaa tctgttgga 20

<210> 790
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 790
agaccggca gcattctctt 20

<210> 791
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 791
atttaaccat ttcctcatta 20

<210> 792
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 792
acctaaattg catttttagt 20

<210> 793
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 793
ttccttcagg ggttttcttg 20

<210> 794
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 794
ctggttggtta ctcaaatttc

20

<210> 795
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 795
cttcttagat ttatctctga

20

<210> 796
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 796
aaaaccttat agagtcatag

20

<210> 797
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 797
aaataagggtc cctctgttgc

20

<210> 798
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 798
taaataagtt cttcacttca

20

<210> 799
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 799
catccatgcc tgagactgtg

20

<210> 800
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 800
gtagggacag tctttgcaga

20

<210> 801
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 801
tggcagttgc aggtctctct

20

<210> 802
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 802
aatgttggtc gtgtgttgaa

20

<210> 803
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 803
accatgcatc acaatttgga

20

<210> 804
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 804
agtcatatgg atgttatgga 20

<210> 805
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 805
accaaggaag ggctaaatat 20

<210> 806
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 806
tctcagttca aagctgtttg 20

<210> 807
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 807
ctgcagcgca cactcggcag 20

<210> 808
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 808
atgcctgaga ctgtgcggtg 20

<210> 809
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 809
ttgcagatac caaactcttc 20

<210> 810
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 810
cgggagaccc ggcagcattc 20

<210> 811
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 811
ttacctaaat tgcattttta 20

<210> 812
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 812
aatttgactc actgcggtct 20

<210> 813
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 813
tcttcattcc atatcccaac 20

<210> 814
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 814
ccaaggaagg gctaaatatt

20

<210> 815
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 815
cagttcaaag ctgtttgtta

20

<210> 816
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 816
agtcataggt ttttattcta

20

<210> 817
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 817
aattgattct tcttttacaa

20

<210> 818
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 818
taagttcttc acttcaaata

20

<210> 819
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 819
tgccatccat gcctgagact

20

<210> 820
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 820
cctcagcccc gggccacact

20

<210> 821
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 821
ttttcccgtc cccctgtcac

20

<210> 822
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 822
ccatgcatca caatttgat

20

<210> 823
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 823
ctggatccac catgcatcac

20

<210> 824
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 824
actcactgcg gtcttcagct 20

<210> 825
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 825
tttgactttt cccaaagcca 20

<210> 826
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 826
ttgtttttatt ttgacttttc 20

<210> 827
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 827
ataaacatgt ccttttataaa 20

<210> 828
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 828
atgtttccca gctgcctccg 20

<210> 829
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 829
gccatccatg cctgagactg 20

<210> 830
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 830
aaacaaatct gttggaagac 20

<210> 831
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 831
gggagacccg gcagcattct 20

<210> 832
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 832
tccatgtaag attacctaaa 20

<210> 833
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 833
taccaaggaa gggctaaata 20

<210> 834
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 834
ctaacacatt tatttataaa 20

<210> 835
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 835
attttcatac cttaaattga 20

<210> 836
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 836
cacaactctg ttggccaact 20

<210> 837
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 837
ttttttattg aacaataata 20

<210> 838
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 838
cttttttatt gaacaataat 20

<210> 839
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 839
ttcttttttta ttgaacaata 20

<210> 840
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 840
catgtttccc agctgcctcc 20

<210> 841
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 841
tccccattag aaggctgaca 20

<210> 842
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 842
cgtagggaca gtctttgcag 20

<210> 843
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 843
acttcttctc tcacaatatt 20

<210> 844
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 844
aaccatttcc tcattacggg 20

<210> 845
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 845
gatttaacca tttcctcatt 20

<210> 846
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 846
gataataaat ttatcatgcc 20

<210> 847
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 847
gacatgtttt ctgctgaaaa 20

<210> 848
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 848
ttattgaaca ataataaaca 20

<210> 849
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 849
tggtctttgc tggtgggaag

20

<210> 850
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 850
gctcttcacg tttcccagct

20

<210> 851
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 851
gacgctcttc atgtttccca

20

<210> 852
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 852
cttttgcaact cactgctgtc

20

<210> 853
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 853
actcggcagc agccacagtc

20

<210> 854
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 854
tctttgcaga taccaaactc

20

<210> 855
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 855
agaaacaaat ctgttggaag

20

<210> 856
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 856
agagaaacaa atctgttgga

20

<210> 857
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 857
caacttcttc tctcacaata

20

<210> 858
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 858
ctttcacaac ttcttctctc

20

<210> 859
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 859
ttatttctaac catttttcaac 20

<210> 860
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 860
accttataga gtcatagggtt 20

<210> 861
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 861
ttttttattga acaataataa 20

<210> 862
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 862
agacgctctt catgttttccc 20

<210> 863
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 863
aaatggttggc tgtgtgttga 20

<210> 864
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 864
ttgttttctg gatccaccat 20

<210> 865
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 865
attacctaaa ttgcattttt 20

<210> 866
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 866
aagattacct aaattgcatt 20

<210> 867
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 867
tttatttccc actcccaccc 20

<210> 868
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 868
taaccgga actacatcag 20

<210> 869
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 869
tacacacaca aaccaccagt

20

<210> 870
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 870
gtcatagggtt tttattctaa

20

<210> 871
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 871
atactttctga gatatttcct

20

<210> 872
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 872
ggcagttccac cgcataatta

20

<210> 873
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 873
actgaatatt ggaagaagg

20

<210> 874
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 874
ttggctgtgt gttgaacaat 20

<210> 875
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 875
taaattgcat ttttagttct 20

<210> 876
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 876
ccatgtaaga ttacctaaat 20

<210> 877
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 877
ttgacttttc ccaaagccaa 20

<210> 878
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 878
gcagcctttt gaaattgctc 20

<210> 879
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 879
cagcagcctt ttgaaattgc 20

<210> 880
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 880
acagcactta tgttttaaata 20

<210> 881
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 881
aagttcttca cttcaaataa 20

<210> 882
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 882
acagcttatg cagctttaca 20

<210> 883
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 883
taattattgc tccaggcggc 20

<210> 884
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 884
tgctgtcaca gtgttgaggg 20

<210> 885
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 885
tcggcagcag ccacagtcgt 20

<210> 886
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 886
agatacaaaa ctcttcacca 20

<210> 887
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 887
cagataccaa actcttcacc 20

<210> 888
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 888
atcacgaaaa tagagccttc 20

<210> 889
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 889
tctacatgca ttcgaaatatt

20

<210> 890
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 890
caaataatact cctaattcca

20

<210> 891
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 891
aattcttataa taagttcttc

20

<210> 892
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 892
gacacctcag ccccgggcca

20

<210> 893
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 893
acaacttctt ctctcacaat

20

<210> 894
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 894
tgttggctgt gtgttgaaca 20

<210> 895
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 895
ttacatgtac ttatgctata 20

<210> 896
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 896
atctacatgc attcgaatat 20

<210> 897
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 897
gtgtttccta tgccccagaa 20

<210> 898
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 898
atgtttgaaa accttataga 20

<210> 899
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 899
ttcttcactt caaataaaat

20

<210> 900
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 900
cagcttatgc agctttacat

20

<210> 901
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 901
ctgcctccgg ctcggtcttc

20

<210> 902
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 902
gtccaccgca taattattgc

20

<210> 903
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 903
tgcggtagca agtttctccc

20

<210> 904
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 904
ctttgcagat accaaactct 20

<210> 905
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 905
ctctctgcaa tccatccga 20

<210> 906
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 906
tttcccgccc cccgtgcaca 20

<210> 907
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 907
acgaaaatag agccttctct 20

<210> 908
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 908
gcatcacaat ttggatcttc 20

<210> 909
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 909
ctttttgttt tctggatcca 20

<210> 910
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 910
cctaaattgc atttttagtt 20

<210> 911
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 911
taagattacc taaattgcat 20

<210> 912
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 912
tgtctccatg taagattacc 20

<210> 913
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 913
taagtcttca ttccatatcc 20

<210> 914
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 914
cttttcccaa agccaaaaaa

20

<210> 915
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 915
ctacatcagc agccttttga

20

<210> 916
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 916
acacaaacca ccagtgggta

20

<210> 917
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 917
cacacacaaa ccaccagtgg

20

<210> 918
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 918
aataaggtcc ctctgttgct

20

<210> 919
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 919
tatgtttaaa taaggtccct 20

<210> 920
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 920
gaagtcacag cacttatgtt 20

<210> 921
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 921
aagttgacat gttttctgct 20

<210> 922
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 922
ttttaaaaca aaacctaaca 20

<210> 923
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 923
agctgcctcc ggctcggctc 20

<210> 924
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 924
gggacagtct ttgcagatac 20

<210> 925
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 925
cacaacttct tctctcaca 20

<210> 926
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 926
gacccggcag cattctcttt 20

<210> 927
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 927
ctctcagaaa tcacagccgg 20

<210> 928
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 928
tacctaaatt gcatttttag 20

<210> 929
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 929
cctgtctcca tgtaagatta

20

<210> 930
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 930
agcagccttt tgaaattgct

20

<210> 931
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 931
cttagattta tctctgaggt

20

<210> 932
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 932
tcataggttt ttattctaac

20

<210> 933
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 933
attccttcaa atatactcct

20

<210> 934
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 934
cctgtttgtg ctaagattct 20

<210> 935
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 935
tacttctgag atatttccta 20

<210> 936
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 936
ttaaataagt tcttcacttc 20

<210> 937
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 937
cacacacatt cacaactctg 20

<210> 938
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 938
aactcttcac caaaaggatc 20

<210> 939
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 939
aacttcttct ctcacaatat 20

<210> 940
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 940
cctcattacg ggagaccg 20

<210> 941
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 941
tctggatcca ccatgcatca 20

<210> 942
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 942
ctaaattgca ttttttagttc 20

<210> 943
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 943
acctgtctcc atgtaagatt 20

<210> 944
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 944
tctagagaag ctacctacca 20

<210> 945
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 945
tctctgaggt ggcatacggt 20

<210> 946
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 946
tgacattttt tgaatccag 20

<210> 947
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 947
tcttttttat tgaacaataa 20

<210> 948
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 948
gccacacttc atgcatcca 20

<210> 949
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 949
ccccattaga aggctgacac

20

<210> 950
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 950
agggacagtc tttgcagata

20

<210> 951
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 951
tagggacagt ctttgcagat

20

<210> 952
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 952
aaggtgccgt agggacagtc

20

<210> 953
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 953
catctccaga tgccatgtca

20

<210> 954
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 954
actttttgtt ttctggatcc 20

<210> 955
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 955
tcttcagtgt tactatacac 20

<210> 956
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 956
taatttgact cactgcggtc 20

<210> 957
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 957
ttctcctgct cttaagtctt 20

<210> 958
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 958
atctctgagg tggcatcacgt 20

<210> 959
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 959
gttgacatgt tttctgctga 20

<210> 960
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 960
agttcttcac ttcaaataaa 20

<210> 961
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 961
cgctcttcat gtttcccagc 20

<210> 962
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 962
cagtccaccg cataattatt 20

<210> 963
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 963
cgccctgcag cgcacactcg 20

<210> 964
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 964
tacatgtact tatgctatat 20

<210> 965
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 965
tttaacaaac acatacaagt 20

<210> 966
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 966
gctgtttgtt actcaaattt 20

<210> 967
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 967
ccttttgaaa ttgctctcag 20

<210> 968
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 968
acacatttat ttataaaaat 20

<210> 969
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 969
tagagtcata gggtttttatt

20

<210> 970
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 970
ataaggtccc tctggtgctc

20

<210> 971
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 971
cttatgttta aataaggtcc

20

<210> 972
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 972
gattctttca aatatactcc

20

<210> 973
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 973
tttgtgctaa gattctttca

20

<210> 974
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 974
agcttatgca gctttacatt

20

<210> 975
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 975
atgccatcca tgcctgagac

20

<210> 976
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 976
cagtctttgc agatacaaaa

20

<210> 977
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 977
acagtctttg cagatacaca

20

<210> 978
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 978
tcacaacttc ttctctcaca

20

<210> 979
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 979
aaaatagagc cttctctcag 20

<210> 980
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 980
tggctgtgtg ttgaacaatc 20

<210> 981
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 981
attacatgta cttatgctat 20

<210> 982
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 982
taaataaggt ccctctggtg 20

<210> 983
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 983
tcacagcact tatgttttaa 20

<210> 984
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 984
ttttcatacc tttaaattgaa

20

<210> 985
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 985
cctaagaaca tctagtacaa

20

<210> 986
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 986
gggaatttca ggcattttcc

20

<210> 987
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 987
aggggaattt caggcathtt

20

<210> 988
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 988
ccatctccag atgcatgtc

20

<210> 989
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 989
aatctacatg cattcgaata 20

<210> 990
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 990
taacaaatct acatgcattc 20

<210> 991
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 991
atatcccaac attaatgtac 20

<210> 992
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 992
cagcacttat gtttaaataa 20

<210> 993
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 993
agttgacatg ttttctgctg 20

<210> 994
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 994
tgcctgagac tgtgcggtag 20

<210> 995
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 995
acacctcagc cccgggccac 20

<210> 996
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 996
tgacacctca gccccgggcc 20

<210> 997
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 997
ggcagttgca ggtctctctg 20

<210> 998
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 998
tttttgtttt ctggatccac 20

<210> 999
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 999
tcgaatattt aacaaacaca 20

<210> 1000
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1000
tatttttcata ccttaaattg 20

<210> 1001
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1001
ttcaaata ctcctaattc 20

<210> 1002
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1002
tttattgaac aataataaac 20

<210> 1003
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1003
ctcttgacgc gcgggctgct 20

<210> 1004
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1004
ctcagccccg ggccacactt

20

<210> 1005
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1005
atctccagat gccatgtcat

20

<210> 1006
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1006
tcaggggttt tctggttgtt

20

<210> 1007
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1007
acatcagcag ccttttgaaa

20

<210> 1008
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1008
agtgtatgtg tttcctatgc

20

<210> 1009
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1009
gtggcatacg ttaaagctat

20

<210> 1010
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1010
atacacacac aaaccaccag

20

<210> 1011
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1011
ctaaccattt tcaacaaata

20

<210> 1012
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1012
ttaaagttga catgttttct

20

<210> 1013
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1013
atgtcctttt aaaacaaaac

20

<210> 1014
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1014

cactcggcag cagccacagt

20

<210> 1015

<211> 20

<212> DNA

<213> artificial

<220>

<223> human ESM-1 antisense

<400> 1015

gaaggggaat ttcaggcatt

20

<210> 1016

<211> 20

<212> DNA

<213> artificial

<220>

<223> human ESM-1 antisense

<400> 1016

aaatagagcc ttctctcaga

20

<210> 1017

<211> 20

<212> DNA

<213> artificial

<220>

<223> human ESM-1 antisense

<400> 1017

ctacatgcat tcgaatattt

20

<210> 1018

<211> 20

<212> DNA

<213> artificial

<220>

<223> human ESM-1 antisense

<400> 1018

ttaacaaatc tacatgcatt

20

<210> 1019

<211> 20

<212> DNA

<213> artificial

<220>

<223> human ESM-1 antisense

<400> 1019
tttaacaaat ctacatgcat 20

<210> 1020
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1020
aaattgctct cagttcaaag 20

<210> 1021
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1021
ctctgaggtg gcatacgtta 20

<210> 1022
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1022
cacaaaccac cagtgggtaa 20

<210> 1023
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1023
tttcaaatat actcctaatt 20

<210> 1024
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1024
cttaaataag ttcttcactt 20

<210> 1025
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1025
acaactctgt tggccaactt 20

<210> 1026
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1026
ttttattgaa caataataaa 20

<210> 1027
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1027
ggtcagcagc aagacgtctt 20

<210> 1028
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1028
tcccgtcccc ctgtcacaga 20

<210> 1029
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1029
tattggaaga aggggaattt 20

<210> 1030
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1030
taacaaacac atacaagtgt 20

<210> 1031
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1031
gtaagattac ctaaattgca 20

<210> 1032
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1032
agggctaaat attttatttc 20

<210> 1033
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1033
caaggaagg ctaaatttt 20

<210> 1034
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1034
tttctggttg ttttattttg 20

<210> 1035
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1035
taacacattt atttataaaa 20

<210> 1036
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1036
ggataataaaa tttatcatgc 20

<210> 1037
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1037
agtcacagca cttatgttta 20

<210> 1038
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1038
ttttacaaac ctcctaaaaa 20

<210> 1039
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1039
ggccttccac acacattcac 20

<210> 1040
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1040
agtccaccgc ataattattg 20

<210> 1041
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1041
atattggaag aaggggaatt 20

<210> 1042
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1042
aatagagcct tctctcagaa 20

<210> 1043
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1043
cgaatattta acaaacacat 20

<210> 1044
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1044
ttctagagaa gctacctacc 20

<210> 1045
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1045
agctgtttgt tactcaaatt 20

<210> 1046
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1046
tttaccttca tacacacaca 20

<210> 1047
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1047
atgggtaggg aagatgactt 20

<210> 1048
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1048
tatgggtagg gaagatgact 20

<210> 1049
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1049
aagtcacagc acttatgttt 20

<210> 1050
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1050
cgaagtcaca gcacttatgt 20

<210> 1051
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1051
cttttacaaa cctcctaaaa 20

<210> 1052
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1052
aacagcttat gcagctttac 20

<210> 1053
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1053
acgctcttca tgtttcccag 20

<210> 1054
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1054
caggtgtgca ggcacgagga 20

<210> 1055
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1055
ctgcaatcca tcccgaaggt 20

<210> 1056
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1056
cggcagcatt ctctttcaca 20

<210> 1057
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1057
atatttaaca aacacataca 20

<210> 1058
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1058
ctcagttcaa agctgtttgt 20

<210> 1059
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1059
acaggtaacc cgggaactac 20

<210> 1060
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1060
cccagctgcc tccggctcgg 20

<210> 1061
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1061
tcccagctgc ctccggctcg 20

<210> 1062
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1062
agcagcaaga cgctcttcat 20

<210> 1063
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1063
gcagtccacc gcataattat 20

<210> 1064
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1064
ggccacactt catgccatcc

20

<210> 1065
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1065
ctggcagttg caggtctctc

20

<210> 1066
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1066
gaatattgga agaaggggaa

20

<210> 1067
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1067
ggcagcattc tctttcacaa

20

<210> 1068
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1068
ttaacaaaca catacaagtg

20

<210> 1069
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1069
ttcgaatatt taacaaacac 20

<210> 1070
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1070
gggctaaata ttttatttcc 20

<210> 1071
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1071
tgtgtttcct atgccccaga 20

<210> 1072
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1072
gatttatctc tgaggtggca 20

<210> 1073
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1073
acaaaccacc agtgggtaaa 20

<210> 1074
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1074
cacattttatt tataaaaata 20

<210> 1075
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1075
gacatttttt gaaatccaga 20

<210> 1076
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1076
gtttgtgcta agattctttc 20

<210> 1077
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1077
tcaaaggcct tccacacaca 20

<210> 1078
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1078
ggtctttgct ggtgggaagc 20

<210> 1079
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1079
aagacgctct tcatgtttcc 20

<210> 1080
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1080
cccgtcccc tgtcacagat 20

<210> 1081
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1081
aaggggaatt tcaggcattt 20

<210> 1082
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1082
accgcgcagc attctctttc 20

<210> 1083
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1083
acaatcacga aaatagagcc 20

<210> 1084
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1084

aatattttat ttcccactcc

20

<210> 1085

<211> 20

<212> DNA

<213> artificial

<220>

<223> human ESM-1 antisense

<400> 1085

gttactcaaa tttccataag

20

<210> 1086

<211> 20

<212> DNA

<213> artificial

<220>

<223> human ESM-1 antisense

<400> 1086

aggtaaccgc ggaactacat

20

<210> 1087

<211> 20

<212> DNA

<213> artificial

<220>

<223> human ESM-1 antisense

<400> 1087

aacacattta tttataaaaa

20

<210> 1088

<211> 20

<212> DNA

<213> artificial

<220>

<223> human ESM-1 antisense

<400> 1088

accttaaatt gaaaattcac

20

<210> 1089

<211> 20

<212> DNA

<213> artificial

<220>

<223> human ESM-1 antisense

<400> 1089
ctttcaaata tactcctaataat 20

<210> 1090
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1090
aaactcttca ccaaaaaggat 20

<210> 1091
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1091
ataccaaaact cttcaccaaaa 20

<210> 1092
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1092
cttcttctct cacaatatgtg 20

<210> 1093
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1093
gtacatcaaa gtcaaagaac 20

<210> 1094
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1094
atgtacatca aagtcaaaga 20

<210> 1095
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1095
ttttcccaaa gccaaaaaaa 20

<210> 1096
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1096
tgacttttcc caaagccaaa 20

<210> 1097
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1097
gccttttgaa attgctctca 20

<210> 1098
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1098
catacacaca caaaccacca 20

<210> 1099
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1099
ttaaataagg tccctctgtt 20

<210> 1100
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1100
gagatatttc ctaagaacat 20

<210> 1101
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1101
tgagatattt cctaagaaca 20

<210> 1102
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1102
tggccaactt caagaataaa 20

<210> 1103
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1103
tcagccccgg gccacacttc 20

<210> 1104
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1104
cacctcagcc ccgggccaca 20

<210> 1105
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1105
atttaacaaa cacatacaag 20

<210> 1106
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1106
catgtaagat tacctaaatt 20

<210> 1107
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1107
aaggaagggc taaatatttt 20

<210> 1108
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1108
tcagttcaaa gctgtttggt 20

<210> 1109
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1109
tcagcagcct tttgaaattg 20

<210> 1110
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1110
agatttcttt cctcaagagg 20

<210> 1111
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1111
ttcatacctt aaattgaaaa 20

<210> 1112
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1112
ctcctaattc cacctatatt 20

<210> 1113
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1113
acttcaaata aaatacttct 20

<210> 1114
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1114
taacagctta tgcagcttta 20

<210> 1115
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1115
cctttttaaaa caaaacctaa 20

<210> 1116
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1116
tcctttttaaa acaaaaccta 20

<210> 1117
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1117
tggggaagcag ccgtgaccca 20

<210> 1118
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1118
tctgcaatcc atcccgaagg 20

<210> 1119
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1119
agaaggggaa tttcaggcat 20

<210> 1120
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1120
aatcacgaaa atagagcctt 20

<210> 1121
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1121
gttggctgtg tgttgaacaa 20

<210> 1122
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1122
ttctggatcc accatgcac 20

<210> 1123
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1123
tgtacatcaa agtcaaagaa 20

<210> 1124
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1124
gttgttttat tttgactttt 20

<210> 1125
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1125
ctctcagttc aaagctgttt 20

<210> 1126
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1126
tggcatacgt taaagctatt 20

<210> 1127
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1127
atagagtcac aggtttttat 20

<210> 1128
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1128
atgttttaaataaggccctc 20

<210> 1129
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1129
gtcacagcac ttatgtttaa

20

<210> 1130
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1130
tcatacctta aattgaaaat

20

<210> 1131
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1131
tttcatacct taaattgaaa

20

<210> 1132
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1132
gctaagattc tttcaaatat

20

<210> 1133
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1133
cagcaagacg ctcttcatgt

20

<210> 1134
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1134
agccacagtc gtcgagcact

20

<210> 1135
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1135
tcatgccatc catgcctgag

20

<210> 1136
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1136
cagccccggg ccacacttca

20

<210> 1137
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1137
aaaatgttgg ctgtgtgttg

20

<210> 1138
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1138
acatcaaagt caaagaacta

20

<210> 1139
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1139
tacatcaaag tcaaagaact 20

<210> 1140
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1140
ctcttaagtc ttcattccat 20

<210> 1141
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1141
gctcttaagt cttcattcca 20

<210> 1142
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1142
tatctctgag gtggcatacg 20

<210> 1143
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1143
tctttttacaa acctcctaaa 20

<210> 1144
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1144
atatttccta agaacatcta

20

<210> 1145
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1145
cacttcaaatt aaaatacttc

20

<210> 1146
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1146
taaacatgtc cttttaaaac

20

<210> 1147
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1147
tgtttcccag ctgcctccgg

20

<210> 1148
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1148
tcacagtgtt gagggcagtc

20

<210> 1149
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1149
attggaagaa ggggaatttc 20

<210> 1150
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1150
aatattggaa gaaggggaat 20

<210> 1151
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1151
aaatcacagc cgggatcagc 20

<210> 1152
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1152
tatttaacaa acacatacaa 20

<210> 1153
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1153
aattgctctc agttcaaagc 20

<210> 1154
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1154
ttatctctga ggtggcatac 20

<210> 1155
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1155
ttaccttcat acacacacaa 20

<210> 1156
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1156
acattttattt ataaaaatat 20

<210> 1157
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1157
atatgggtag ggaagatgac 20

<210> 1158
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1158
cctaattcca cctatatattt 20

<210> 1159
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1159
tcttcacttc aaataaaata

20

<210> 1160
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1160
ttggccaact tcaagaataa

20

<210> 1161
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1161
caaaggcctt ccacacacat

20

<210> 1162
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1162
ttcccagctg cctccggctc

20

<210> 1163
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1163
tgcagcgcac actcggcagc

20

<210> 1164
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1164
cagaaatcac agccgggatc 20

<210> 1165
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1165
actaatttga ctactgcgg 20

<210> 1166
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1166
aactaatttg actcactgcg 20

<210> 1167
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1167
ttctggttgt tttattttga 20

<210> 1168
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1168
atttcataa gttcaaaca 20

<210> 1169
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1169
tacatcagca gccttttgaa 20

<210> 1170
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1170
tttatctctg aggtggcata 20

<210> 1171
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1171
ttatggataa taaatttatc 20

<210> 1172
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1172
attatggata ataaatttat 20

<210> 1173
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1173
gaacatctag tacaacagtc 20

<210> 1174
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1174
caactctgtt ggccaacttc 20

<210> 1175
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1175
ctgtgcggtg gcaagtttct 20

<210> 1176
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1176
ccacacttca tgccatccat 20

<210> 1177
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1177
ctccagatgc catgtcatgc 20

<210> 1178
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1178
ggatttaacc atttcctcat 20

<210> 1179
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1179
gctgtgtgtt gaacaatcac

20

<210> 1180
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1180
aattacatgt acttatgcta

20

<210> 1181
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1181
aaatctacat gcattcgaat

20

<210> 1182
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1182
tgggtaggga agatgacttg

20

<210> 1183
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1183
ttttttgaaa tccagagtga

20

<210> 1184
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1184
atTTTTtgaa atccagagtg 20

<210> 1185
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1185
ttatTTTTcat accttaaatt 20

<210> 1186
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1186
aaatatactc ctaattccac 20

<210> 1187
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1187
ttgtgctaag attctttcaa 20

<210> 1188
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1188
atttcctaag aacatctagt 20

<210> 1189
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1189
taattcttaa ataagttctt 20

<210> 1190
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1190
ctttttaaacc aaaacctaac 20

<210> 1191
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1191
gttctttttt attgaacaat 20

<210> 1192
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1192
aggctgacac ctcagccccg 20

<210> 1193
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1193
caatccatcc cgaaggtgcc 20

<210> 1194
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1194
atcacagccg ggatcagcgt 20

<210> 1195
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1195
gaatattttaa caaacacata 20

<210> 1196
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1196
atttaacaaa tctacatgca 20

<210> 1197
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1197
ttcaggggtt ttctggttgt 20

<210> 1198
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1198
aacttatttt cataccttaa 20

<210> 1199
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1199
aagaacatct agtacaacag 20

<210> 1200
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1200
tttacattca aaggccttcc 20

<210> 1201
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1201
tttcccagct gcctccggt 20

<210> 1202
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1202
tcttgtagcg cgggctgctt 20

<210> 1203
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1203
ggagaccg cagcattctc 20

<210> 1204
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1204
ggctgtgtgt tgaacaatca 20

<210> 1205
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1205
attgctctca gttcaaagct 20

<210> 1206
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1206
ttagatttat ctctgaggtg 20

<210> 1207
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1207
cactcactgc tgtcacagtg 20

<210> 1208
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1208
gcagccacag tcgtcgagca 20

<210> 1209
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1209
gccctgcagc gcacactcgg

20

<210> 1210
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1210
tttgcagata ccaaactctt

20

<210> 1211
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1211
tccccctgtc acagatgcct

20

<210> 1212
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1212
aagaagggga atttcaggca

20

<210> 1213
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1213
catcacaatt tggatcttca

20

<210> 1214
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1214
aagaactaat ttgactcact 20

<210> 1215
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1215
agatttatct ctgaggtggc 20

<210> 1216
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1216
cttcttttac aaacctccta 20

<210> 1217
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1217
aatacttctg agatatttcc 20

<210> 1218
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1218
ttcatgtttc ccagctgcct 20

<210> 1219
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1219
gtggttgaggg cagtccaccg 20

<210> 1220
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1220
cacagtgttg agggcagtc 20

<210> 1221
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1221
gaaggtgccg tagggacagt 20

<210> 1222
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1222
gaagaagggg aatttcaggc 20

<210> 1223
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1223
caatcacgaa aatagagcct 20

<210> 1224
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1224
caaacacata caagtgttca 20

<210> 1225
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1225
aaagaactaa ttgactcac 20

<210> 1226
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1226
cacagcactt atgtttaaat 20

<210> 1227
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1227
taagaacatc tagtacaaca 20

<210> 1228
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1228
aaaggccttc cacacacatt 20

<210> 1229
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1229
ttacattcaa aggccttcca

20

<210> 1230
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1230
cagctttaca ttcaaaggcc

20

<210> 1231
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1231
cttcattgttt cccagctgcc

20

<210> 1232
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1232
gctttttgcac tcaactgctgt

20

<210> 1233
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1233
cttgacagcgc gggctgcttt

20

<210> 1234
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1234
tgtgcggtag caagtttctc

20

<210> 1235
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1235
ctgaatattg gaagaagggg

20

<210> 1236
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1236
tctccagatg ccatgtcatg

20

<210> 1237
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1237
acacatacaa gtgttcagtc

20

<210> 1238
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1238
aatatttaac aaacacatac

20

<210> 1239
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1239
caaagaacta atttgactca 20

<210> 1240
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1240
ttaagtcttc attccatata 20

<210> 1241
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1241
atcagcagcc ttttgaaatt 20

<210> 1242
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1242
ggcatacggt aaagctatatt 20

<210> 1243
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1243
ggtggcatatc gttaaagcta 20

<210> 1244
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1244
ttgacatgtt ttctgctgaa 20

<210> 1245
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1245
tttaaagtgtg acatgttttc 20

<210> 1246
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1246
tttcctaaga acatctagta 20

<210> 1247
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1247
ggccaacttc aagaataaaa 20

<210> 1248
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1248
aggtgtgcag gcacgaggag 20

<210> 1249
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1249
ttagaaggct gacacctcag 20

<210> 1250
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1250
caaactctaca tgcattcgaa 20

<210> 1251
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1251
ctaatttgac tcactgcggt 20

<210> 1252
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1252
caacattaat gtacatcaaa 20

<210> 1253
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1253
ctagagaagc tacctaccaa 20

<210> 1254
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1254
atttaccttc atacacacac
20

<210> 1255
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1255
gattttctttc ctcaagagga
20

<210> 1256
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1256
taaccatttt caacaaataa
20

<210> 1257
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1257
atccagagtg actcctataa
20

<210> 1258
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1258
ctaattccac ctatatattta
20

<210> 1259
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1259
aaacatgtcc tttttaaaca

20

<210> 1260
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1260
gggccacact tcatgccatc

20

<210> 1261
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1261
catcccgaag gtgccgtagg

20

<210> 1262
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1262
gagagaaaca aatctgttgg

20

<210> 1263
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1263
caggtaaccc gggaactaca

20

<210> 1264
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1264
acacacacaa accaccagtg 20

<210> 1265
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1265
aatatgggta gggaagatga 20

<210> 1266
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1266
tgataataa atttatcatg 20

<210> 1267
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1267
atggataata aatttatcat 20

<210> 1268
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1268
tgactcctat aattatggat 20

<210> 1269
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1269
tgacatgttt tctgctgaaa 20

<210> 1270
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1270
ctttacattc aaaggccttc 20

<210> 1271
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1271
gtccttttaa aacaaaacct 20

<210> 1272
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1272
aatgtacatc aaagtcaaag 20

<210> 1273
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1273
ggtaaccgga gaactacatc 20

<210> 1274
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1274
ttcttagatt tatctctgag 20

<210> 1275
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1275
tgtttgaaaa ccttatagag 20

<210> 1276
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1276
tgtttaaata aggtccctct 20

<210> 1277
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1277
cttattttca taccttaaatt 20

<210> 1278
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1278
gcctgagact gtgcggtagc 20

<210> 1279
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1279
atgcattcga atatttaaca 20

<210> 1280
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1280
gtaacccggg aactacatca 20

<210> 1281
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1281
tagatttctt tcctcaagag 20

<210> 1282
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1282
gtttgaaaac cttatagagt 20

<210> 1283
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1283
gtgactccta taattatgga 20

<210> 1284
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1284
tttaaataag gtccctctgt

20

<210> 1285
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1285
taccttaaattgaaaattca

20

<210> 1286
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1286
acaaacctcc taaaaactta

20

<210> 1287
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1287
tacaaacctc ctaaaaactt

20

<210> 1288
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1288
aaagttgaca tgttttctgc

20

<210> 1289
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1289
aacatgtcct tttaaaacaa 20

<210> 1290
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1290
ggtgtgcagg cacaggagc 20

<210> 1291
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1291
actgtgcggt agcaagtttc 20

<210> 1292
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1292
catgccatcc atgcctgaga 20

<210> 1293
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1293
gataccaaac tcttcaccaa 20

<210> 1294
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1294
tctctgcaat ccatcccgaa 20

<210> 1295
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1295
gtccccctgt cacagatgcc 20

<210> 1296
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1296
ggaagaaggg gaatttcagg 20

<210> 1297
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1297
tacatgcatt cgaatattta 20

<210> 1298
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1298
atttatctct gaggtggcat 20

<210> 1299
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1299
tatggataat aaatttatca 20

<210> 1300
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1300
cataccttaa attgaaaatt 20

<210> 1301
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1301
aaacttattt tcatacctta 20

<210> 1302
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1302
tcctaattcc acctatattt 20

<210> 1303
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1303
tcctaagaac atctagtaca 20

<210> 1304
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1304
aactctgttg gccaaacttca 20

<210> 1305
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1305
ttcccgtccc cctgtcacag 20

<210> 1306
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1306
cacagccggg atcagcgtgg 20

<210> 1307
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1307
aaacacatac aagtgttcag 20

<210> 1308
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1308
gcattcgaat atttaacaaa 20

<210> 1309
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1309
taatgtacat caaagtcaaa 20

<210> 1310
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1310
taaatatattt atttcccact 20

<210> 1311
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1311
aagctgtttg ttactcaaat 20

<210> 1312
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1312
gatatttcct aagaacatct 20

<210> 1313
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1313
tactgaaata attcttaaatt 20

<210> 1314
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1314
tcctcttgca ggcgaggctg

20

<210> 1315
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1315
ccggcagcat tctctttcac

20

<210> 1316
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1316
ttaaccattt cctcattacg

20

<210> 1317
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1317
gttactatac acacacattt

20

<210> 1318
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1318
taccttcata cacacacaaa

20

<210> 1319
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1319
tatataaata tttaccttca

20

<210> 1320
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1320
ttgaaatcca gagtgactcc

20

<210> 1321
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1321
cttcacttca aataaaaatac

20

<210> 1322
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1322
ttgcagcgcg ggctgctttt

20

<210> 1323
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1323
ccattagaag gctgacacct

20

<210> 1324
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1324
ttggaagaag ggggaatttca 20

<210> 1325
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1325
agaaatcaca gccgggatca 20

<210> 1326
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1326
aacacataca agtggttcagt 20

<210> 1327
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1327
ggttgtttta ttttgacttt 20

<210> 1328
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1328
tatagagtca taggttttta 20

<210> 1329
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1329
tccagagtga ctcctataat

20

<210> 1330
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1330
tctttcaa atactcctaa

20

<210> 1331
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1331
ataattctta aataagttct

20

<210> 1332
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1332
gcagcaagac gctcttcacg

20

<210> 1333
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1333
tggtcagcag caagacgctc

20

<210> 1334
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1334
taccaaaactc ttcaccaaaa

20

<210> 1335
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1335
tccagatgcc atgtcatgct

20

<210> 1336
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1336
taaaatggtg gctgtgtgtt

20

<210> 1337
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1337
ggctaaatat tttatttccc

20

<210> 1338
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1338
tagatttatc tctgaggtgg

20

<210> 1339
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1339
atatataaat atttaccttc 20

<210> 1340
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1340
tttacaaacc tcctaaaaac 20

<210> 1341
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1341
tgttgagggc agtccaccgc 20

<210> 1342
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1342
agtgttgagg gcagtccacc 20

<210> 1343
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1343
acttcatgcc atccatgcct 20

<210> 1344
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1344
cccgaaggtg ccgtagggac 20

<210> 1345
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1345
aatcacagcc gggatcagcg 20

<210> 1346
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1346
tgcattcgaa tatttaacaa 20

<210> 1347
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1347
tcaaagtcaa agaactaatt 20

<210> 1348
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1348
tttcataag cttcaaacad 20

<210> 1349
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1349
ttctttcaaa tataactccta 20

<210> 1350
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1350
ctgagatatt tcctaagaac 20

<210> 1351
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1351
atactgaaat aattcttaaa 20

<210> 1352
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1352
gttggccaac ttcaagaata 20

<210> 1353
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1353
gaggagcgtg gtcagcagca 20

<210> 1354
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1354
tttcccaaag ccaaaaaaaaaa 20

<210> 1355
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1355
ttactcaaat ttccataagc 20

<210> 1356
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1356
catacgttaa agctatttat 20

<210> 1357
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1357
attttcaaca aataatacta 20

<210> 1358
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1358
ccagagtgac tcctataatt 20

<210> 1359
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1359
ttcctaagaa catctagtac 20

<210> 1360
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1360
tacattcaaa ggccttccac 20

<210> 1361
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1361
cttcatgcca tccatgcctg 20

<210> 1362
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1362
actggcagtt gcaggtctct 20

<210> 1363
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1363
tcaaagaact aatttgactc 20

<210> 1364
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1364
aagggtctaaa tatttttattt

20

<210> 1365
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1365
aataatacta gattttctttc

20

<210> 1366
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1366
ctataattat ggataataaa

20

<210> 1367
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1367
tgaaatccag agtgactcct

20

<210> 1368
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1368
ttttaaaagtt gacatgtttt

20

<210> 1369
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1369
agattctttc aaatatactc 20

<210> 1370
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1370
ttcacttcaa ataaaatact 20

<210> 1371
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1371
acattcaaag gccttccaca 20

<210> 1372
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1372
tttaaaacaa aacctaacag 20

<210> 1373
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1373
gcggccacca ggtgtgcagg 20

<210> 1374
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1374
cgggccacac ttcatgccat 20

<210> 1375
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1375
agccccgggc cacacttcat 20

<210> 1376
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1376
gcagatacca aactcttcac 20

<210> 1377
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1377
caaagtcaaa gaactaattt 20

<210> 1378
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1378
aggccttcca cacacattca 20

<210> 1379
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1379
cagccacagt cgtcgagcac 20

<210> 1380
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1380
gtgcggtagc aagtttctcc 20

<210> 1381
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1381
gacagtcttt gcagatacca 20

<210> 1382
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1382
attctagaga agctacctac 20

<210> 1383
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1383
aatttccata agcttcaaac 20

<210> 1384
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1384
aaccatttttc aacaaataat 20

<210> 1385
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1385
aattatggat aataaattta 20

<210> 1386
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1386
gtcttttgctg gtgggaagca 20

<210> 1387
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1387
gcgcgggctg cttttgcact 20

<210> 1388
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1388
gccccggggcc acatttcacg 20

<210> 1389
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1389
tagaaggctg acacctcagc 20

<210> 1390
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1390
tgcaatccat cccgaagggtg 20

<210> 1391
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1391
aacaatcacg aaaatagagc 20

<210> 1392
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1392
acaaatctac atgcattcga 20

<210> 1393
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1393
cttacttcct tcaggggttt 20

<210> 1394
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1394
aaatttccat aagcttcaaa

20

<210> 1395
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1395
aaatatgggt agggaagatg

20

<210> 1396
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1396
aaataatact agatttcttt

20

<210> 1397
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1397
tataattatg gataataaat

20

<210> 1398
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1398
acttatgttt aaataaggtc

20

<210> 1399
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1399
ttgttctttt ttattgaaca 20

<210> 1400
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1400
cgcgggctgc ttttgcactc 20

<210> 1401
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1401
tcagaaatca cagccgggat 20

<210> 1402
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1402
tctccatgta agattaccta 20

<210> 1403
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1403
cttcaggggt tttctggttg 20

<210> 1404
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1404
catcagcagc cttttgaaat 20

<210> 1405
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1405
tcatacacac acaaaccacc 20

<210> 1406
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1406
tttatttata aaaatatata 20

<210> 1407
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1407
cctataatta tggataataa 20

<210> 1408
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1408
tgaatattgg aagaagggga 20

<210> 1409
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1409
gtgttactat acacacacat 20

<210> 1410
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1410
ttgactcact gcgtcttca 20

<210> 1411
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1411
ctaagattct ttcaaata 20

<210> 1412
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1412
agaacatcta gtacaacagt 20

<210> 1413
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1413
tcttcattgt tcccagctgc 20

<210> 1414
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1414
cgaggagcgt ggtcagcagc 20

<210> 1415
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1415
gcagcgcaca ctcggcagca 20

<210> 1416
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1416
cgaaggtgcc gtagggacag 20

<210> 1417
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1417
ggggaatttc aggcattttc 20

<210> 1418
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1418
tgtcatgctc cgtgagagaa 20

<210> 1419
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1419
ctccatgtaa gattacctaa 20

<210> 1420
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1420
tctgggtggt ttattttgac 20

<210> 1421
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1421
aggtggcata cgttaaagct 20

<210> 1422
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1422
accttcatac acacacaaac 20

<210> 1423
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1423
atataaatat ttaccttcac 20

<210> 1424
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1424
tcacttcaaa taaaatactt 20

<210> 1425
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1425
actgaaataa ttcttaaata 20

<210> 1426
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1426
cattcaaagg ccttccacac 20

<210> 1427
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1427
taaaacaaaa cctaacagct 20

<210> 1428
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1428
ttaaaacaaa acctaacagc 20

<210> 1429
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1429
tttaaccatt tcctcattac 20

<210> 1430
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1430
agaactaatt tgactcactg 20

<210> 1431
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1431
atttctttcc tcaagaggat 20

<210> 1432
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1432
agtgactcct ataattatgg 20

<210> 1433
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1433
tttgaaatcc agagtgactc 20

<210> 1434
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1434
ttctttttaca aacctcctaa

20

<210> 1435
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1435
agatatttcc taagaacatc

20

<210> 1436
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1436
acatgtcctt ttaaaacaaa

20

<210> 1437
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1437
ctcttcatgt ttcccagctg

20

<210> 1438
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1438
gtgtgcaggc acgaggagcg

20

<210> 1439
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1439
gccaccaggt gtgcaggcac 20

<210> 1440
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1440
acactcggca gcagccacag 20

<210> 1441
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1441
gcgcacactc ggcagcagcc 20

<210> 1442
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1442
aaggctgaca cctcagcccc 20

<210> 1443
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1443
ccgaaggtgc cgtagggaca 20

<210> 1444
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1444
ctcagaaatc acagccggga 20

<210> 1445
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1445
gtctccatgt aagattacct 20

<210> 1446
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1446
aaagtcaaag aactaatttg 20

<210> 1447
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1447
cacaattaaa ttctagagaa 20

<210> 1448
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1448
ggaactacat cagcagcctt 20

<210> 1449
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1449
tatttacctt catacacaca 20

<210> 1450
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1450
tggtcttttt tattgaacaa 20

<210> 1451
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1451
aggagcgtgg tcagcagcaa 20

<210> 1452
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1452
acgaggagcg tggtcagcag 20

<210> 1453
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1453
acctcagccc cgggccacac 20

<210> 1454
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1454
gtacttatgc tatatctaga 20

<210> 1455
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1455
tcctataatt atggataata 20

<210> 1456
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1456
gttttaaataa ggtccctctg 20

<210> 1457
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1457
cctcctaataa acttatatttc 20

<210> 1458
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1458
acttctgaga tatttcctaa 20

<210> 1459
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1459
ccaggtgtgc aggcacgagg 20

<210> 1460
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1460
cgggctgctt ttgcactcac 20

<210> 1461
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1461
caaactcttc accaaaagga 20

<210> 1462
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1462
ctaaaatggt ggctgtgtgt 20

<210> 1463
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1463
catgtactta tgctatatct 20

<210> 1464
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1464
gactcactgc ggtcttcagc 20

<210> 1465
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1465
tttttgaaat ccagagtgc 20

<210> 1466
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1466
ataccttaaa ttgaaaattc 20

<210> 1467
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1467
acctcctaaa aacttatattt 20

<210> 1468
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1468
ttacaaacct cctaaaaact 20

<210> 1469
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1469
tatttcctaa gaacatctag 20

<210> 1470
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1470
gaaataattc ttaaataagt 20

<210> 1471
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1471
caaaacctaa cagcttatgc 20

<210> 1472
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1472
caagacgctc ttcatgtttc 20

<210> 1473
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1473
ttcatgccat ccatgcctga 20

<210> 1474
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1474
tgactggcag ttgcaggtct 20

<210> 1475
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1475
atgtcatgct ccgtgagaga 20

<210> 1476
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1476
taaccatttc ctcattacgg 20

<210> 1477
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1477
atgtacttat gctatatcta 20

<210> 1478
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1478
aaagctgttt gttactcaaa 20

<210> 1479
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1479
ataatactag atttctttcc , 20

<210> 1480
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1480
gctttacatt caaaggcctt 20

<210> 1481
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1481
gcgggctgct ttgcactca 20

<210> 1482
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1482
cacttcatgc catccatgcc 20

<210> 1483
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1483
gcaatccatc ccgaagggtgc 20

<210> 1484
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1484
tggaagaagg ggaatttcag 20

<210> 1485
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1485
catgcattcg aatatttaac 20

<210> 1486
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1486
agtgttacta tacacacaca 20

<210> 1487
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1487
aagtcaaaga actaatttga 20

<210> 1488
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1488
ctaaatattt tatttccac 20

<210> 1489
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1489
ttattttataa aaatatataa

20

<210> 1490
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1490
taaatatggg tagggaagat

20

<210> 1491
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1491
gatgataaat atgggtaggg

20

<210> 1492
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1492
gccaaacttca agaataaaat

20

<210> 1493
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1493
tcatgtttcc cagctgcctc

20

<210> 1494
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1494
accaggtgtg caggcacgag 20

<210> 1495
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1495
caccaggtgt gcaggcacga 20

<210> 1496
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1496
accaaactct tcaccaaaag 20

<210> 1497
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1497
ctctgcaatc catcccgaag 20

<210> 1498
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1498
gtcatgctcc gtgagagaaa 20

<210> 1499
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1499
tggatttaac catttcctca

20

<210> 1500
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1500
cattcgaata tttaacaaac

20

<210> 1501
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1501
ttactataca cacacattta

20

<210> 1502
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1502
tgactcactg cggctcttcag

20

<210> 1503
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1503
ttcccaaagc caaaaaaaaa

20

<210> 1504
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1504
ccgggaacta catcagcagc 20

<210> 1505
<211> 20
<212> DNA
<213> artificial
<220>
<223> human ESM-1 antisense

<400> 1505
ttataaaaat atataaatat 20

<210> 1506
<211> 20
<212> DNA
<213> artificial
<220>
<223> human ESM-1 antisense

<400> 1506
acttattttc ataccttaaa 20

<210> 1507
<211> 20
<212> DNA
<213> artificial
<220>
<223> human ESM-1 antisense

<400> 1507
aaaacttatt ttcatacctt 20

<210> 1508
<211> 20
<212> DNA
<213> artificial
<220>
<223> human ESM-1 antisense

<400> 1508
attttaaagt tgacatgttt 20

<210> 1509
<211> 20
<212> DNA
<213> artificial
<220>
<223> human ESM-1 antisense

<400> 1509
aataactgaaa taattcttaa

20

<210> 1510
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1510
cttatgcagc ttacattca

20

<210> 1511
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1511
gtttcccagc tgcctccggc

20

<210> 1512
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1512
ccgggccaca cttcatgcca

20

<210> 1513
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1513
tccgtgagag aaacaaatct

20

<210> 1514
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1514
gtggatttaa ccatttcctc 20

<210> 1515
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1515
atcacaattt ggatcttcaa 20

<210> 1516
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1516
tggtactata cacacacatt 20

<210> 1517
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1517
atcaaagtca aagaactaat 20

<210> 1518
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1518
gttaaagcta tttatggaag 20

<210> 1519
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1519
gcatacgтта aagctatttta

20

<210> 1520
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1520
ggatgataaa tatgggtagg

20

<210> 1521
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1521
taattatgga taataaattt

20

<210> 1522
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1522
ctaagaacat ctagtacaac

20

<210> 1523
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1523
ggagcgtggt cagcagcaag

20

<210> 1524
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1524
cggccaccag gtgtgcaggc

20

<210> 1525
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1525
gaacaatcac gaaaatagag

20

<210> 1526
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1526
tagagaagct acctaccaag

20

<210> 1527
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1527
attcaaaggc cttccacaca

20

<210> 1528
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1528
acagtgttga gggcagtcca

20

<210> 1529
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1529
gggctgcttt tgcactcact

20

<210> 1530
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1530
gagactgtgc ggtagcaagt

20

<210> 1531
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1531
tgccatgtca tgctccgtga

20

<210> 1532
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1532
tctcagaaat cacagccggg

20

<210> 1533
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1533
acgttaaagc tatattatgga

20

<210> 1534
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1534
atatttacct tcatacacac

20

<210> 1535
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1535
tttataaaaa tatataaata

20

<210> 1536
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1536
atattatttat aaaaatatat

20

<210> 1537
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1537
tttcaacaaa taataactaga

20

<210> 1538
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1538
aaaacaaaac ctaacagctt

20

<210> 1539
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1539
tgagagaaac aaatctgttg 20

<210> 1540
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1540
gccatgtcat gctccgtgag 20

<210> 1541
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1541
acagccggga tcagcgtgga 20

<210> 1542
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1542
cctaaaatgt tggctgtgtg 20

<210> 1543
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1543
aacattaatg tacatcaaag 20

<210> 1544
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1544
aataattcctt aaataagttc

20

<210> 1545
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1545
ctggttgcca acttcaagaa

20

<210> 1546
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1546
aaaacctaac agcttatgca

20

<210> 1547
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1547
cacactcggc agcagccaca

20

<210> 1548
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1548
ccgtccccct gtcacagatg

20

<210> 1549
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1549
tcacagccgg gatcagcgtg

20

<210> 1550
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1550
acaaacacat acaagtgttc

20

<210> 1551
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1551
attcgaatat ttaacaaaca

20

<210> 1552
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1552
aaatatttta tttcccactc

20

<210> 1553
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1553
cgttaaagct atttatggaa

20

<210> 1554
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1554
acaaaaccta acagcttatg 20

<210> 1555
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1555
cacgaggagc gtggtcagca 20

<210> 1556
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1556
ccaccaggtg tgcaggcacg 20

<210> 1557
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1557
cattagaagg ctgacacctc 20

<210> 1558
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1558
atcccgaagg tgccgtaggg 20

<210> 1559
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1559
cttccttcag gggttttctg 20

<210> 1560
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1560
ttacttcctt caggggtttt 20

<210> 1561
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1561
tatgtgtttc ctatgccccca 20

<210> 1562
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1562
tatttataaa aatatataaa 20

<210> 1563
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1563
caaataatac tagatttctt 20

<210> 1564
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1564
gagtgactcc tataattatg 20

<210> 1565
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1565
ataaaaataga ggtaaataact 20

<210> 1566
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1566
cgtccccctg tcacagatgc 20

<210> 1567
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1567
agctacctac caaggaaggg 20

<210> 1568
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1568
aattctagag aagctaccta 20

<210> 1569
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1569
tttatggaag tgtatgtgtt

20

<210> 1570
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1570
aatatttacc ttcatacaca

20

<210> 1571
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1571
tataaaaata tataaatatt

20

<210> 1572
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1572
ttttgaaatc cagagtgact

20

<210> 1573
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1573
taattccacc tatattttaa

20

<210> 1574
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1574
gactgtgcgg tagcaagttt

20

<210> 1575
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1575
tgagactgtg cggtagcaag

20

<210> 1576
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1576
ctgactggca gttgcaggtc

20

<210> 1577
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1577
ccagatgccca tgtcatgctc

20

<210> 1578
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1578
gaaatcacag ccgggatcag

20

<210> 1579
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1579
ctgtgtgttg aacaatcacg 20

<210> 1580
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1580
gaagggctaa atatttttatt 20

<210> 1581
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1581
tacttccttc aggggttttc 20

<210> 1582
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1582
tggaagtgtg tgtgtttcct 20

<210> 1583
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1583
atztatggaa gtgtatgtgt 20

<210> 1584
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1584
atacgttaaa gctatttatg 20

<210> 1585
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1585
aacctcctaa aaacttattt 20

<210> 1586
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1586
cttctgagat atttcctaag 20

<210> 1587
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1587
cctaacagct tatgcagctt 20

<210> 1588
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1588
acctaacagc ttatgcagct 20

<210> 1589
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1589
tgtacttatg ctatatctag 20

<210> 1590
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1590
attaatgtac atcaaagtca 20

<210> 1591
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1591
aagctaccta ccaaggaagg 20

<210> 1592
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1592
gtatgtgttt cctatgcccc 20

<210> 1593
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1593
aaatatttac cttcatcac 20

<210> 1594
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1594
cagagtgact cctataatta

20

<210> 1595
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1595
atactcctaa ttccacctat

20

<210> 1596
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1596
atatactcct aattccacct

20

<210> 1597
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1597
caaataaaaat acttctgaga

20

<210> 1598
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1598
aaatactgaa ataattctta

20

<210> 1599
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1599
tgttggccaa cttcaagaat 20

<210> 1600
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1600
ttatgcagct ttacattcaa 20

<210> 1601
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1601
gcacgaggag cgtggtcagc 20

<210> 1602
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1602
tgcttttgca ctcactgctg 20

<210> 1603
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1603
tttcctcaag aggatgataa 20

<210> 1604
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1604
tttctttcct caagaggatg 20

<210> 1605
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1605
taataactaga tttctttcct 20

<210> 1606
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1606
taaagttgac atgttttctg 20

<210> 1607
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1607
cgtgagagaa acaaattctgt 20

<210> 1608
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1608
aacaaatcta catgcattcg 20

<210> 1609
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1609
cctaccaagg aagggctaaa

20

<210> 1610
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1610
gctacctacc aaggaagggc

20

<210> 1611
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1611
taaattctag agaagctacc

20

<210> 1612
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1612
acttccttca ggggttttct

20

<210> 1613
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1613
tcttacttcc ttcaggggtt

20

<210> 1614
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1614
tccataagct tcaaacatct 20

<210> 1615
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1615
ttccataagc ttcaaacatc 20

<210> 1616
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1616
ttaaagctat ttatggaagt 20

<210> 1617
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1617
tacgttaaag ctatttatgg 20

<210> 1618
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1618
tataaatatt taccttcata 20

<210> 1619
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1619
ctgaaataat tcttaaataa

20

<210> 1620
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1620
gcttatgcag ctttacattc

20

<210> 1621
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1621
gtgagagaaa caaatctgtt

20

<210> 1622
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1622
tgttgaacaa tcacgaaaat

20

<210> 1623
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1623
cggaactac atcagcagcc

20

<210> 1624
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1624
ataaaaaatat ataaatatattt 20

<210> 1625
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1625
taaaaaactta ttttcataacc 20

<210> 1626
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1626
tatgcagctt tacattcaaa 20

<210> 1627
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1627
ggccaccagg tgtgcaggca 20

<210> 1628
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1628
tgcagcgcg gctgcttttg 20

<210> 1629
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1629
ccaaactctt caccaaaagg 20

<210> 1630
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1630
catgtcatgc tccgtgagag 20

<210> 1631
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1631
ttcaaaaatt acatgtactt 20

<210> 1632
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1632
tactatacac acacatttaa 20

<210> 1633
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1633
aatatactcc taattccacc 20

<210> 1634
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1634
cccattagaa ggctgacacc 20

<210> 1635
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1635
gttgaacaat cacgaaaata 20

<210> 1636
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1636
cattaatgta catcaaagtc 20

<210> 1637
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1637
aaaagcacaa ttaaattcta 20

<210> 1638
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1638
atgtgtttcc tatgccccag 20

<210> 1639
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1639
gaagtgtatg tgtttcctat

20

<210> 1640
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1640
tactcctaatt tccacctata

20

<210> 1641
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1641
tatactccta attccacctata

20

<210> 1642
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1642
aaggccttcc acacacattc

20

<210> 1643
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1643
tcccgaaggt gccgtaggga

20

<210> 1644
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1644
gactggcagt tgcaggtctc 20

<210> 1645
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1645
tttgaaaacc ttatagagtc 20

<210> 1646
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1646
tcttggttctt ttttattgaa 20

<210> 1647
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1647
ggacagtctt tgcagatacc 20

<210> 1648
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1648
ggaagtgtat gtgtttccta 20

<210> 1649
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1649
ctttcctcaa gaggatgata 20

<210> 1650
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1650
ataattatgg ataataaatt 20

<210> 1651
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1651
agagtgactc ctataattat 20

<210> 1652
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1652
cccgggccac acttcatgcc 20

<210> 1653
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1653
attctctttc acaacttctt 20

<210> 1654
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1654
tcaaaaatta catgtactta 20

<210> 1655
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1655
aaaaagcaca attaaattct 20

<210> 1656
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1656
ctgaggtggc atacgttaaa 20

<210> 1657
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1657
taaataattta ccttcataca 20

<210> 1658
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1658
tatttttaaag ttgacatgtt 20

<210> 1659
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1659
actcctaatt ccacctatat 20

<210> 1660
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1660
tgtgctaaga ttctttcaaa 20

<210> 1661
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1661
aaatacttct gagatatttc 20

<210> 1662
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1662
tcaaataaaa tacttctgag 20

<210> 1663
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1663
cttcaaataa aatacttctg 20

<210> 1664
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1664
atgcagcttt acattcaaag 20

<210> 1665
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1665
ctgcttttgc actcactgct 20

<210> 1666
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1666
cctcttgcag cgcgggctgc 20

<210> 1667
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1667
agaaggctga cacctcagcc 20

<210> 1668
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1668
cctgactggc agttgcaggt 20

<210> 1669
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1669
cagccgggat cagcgtggat 20

<210> 1670
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1670
acattaatgt acatcaaagt 20

<210> 1671
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1671
ctacctacca aggaagggt 20

<210> 1672
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1672
acaattaaat tctagagaag 20

<210> 1673
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1673
gggaactaca tcagcagcct 20

<210> 1674
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1674
atggaagtgt atgtgtttcc 20

<210> 1675
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1675
gaataaaata caggtaaata 20

<210> 1676
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1676
tgtgcaggca cgaggagcgt 20

<210> 1677
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1677
acacacacat ttaacaaatc 20

<210> 1678
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1678
tgctaagatt ctttcaaata 20

<210> 1679
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1679
agctttacat tcaaaggcct 20

<210> 1680
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1680
ctaacagctt atgcagcttt 20

<210> 1681
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1681
aacctaacag cttatgcagc 20

<210> 1682
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1682
gcaagacgct cttcatgttt 20

<210> 1683
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1683
ttctctttca caacttcttc 20

<210> 1684
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1684
ccgggatcag cgtggattta 20

<210> 1685
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1685
cttcaaaaat tacatgtact 20

<210> 1686
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1686
acaatttgga tcttcaaaaa 20

<210> 1687
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1687
catgctccgt gagagaaaca 20

<210> 1688
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1688
acatgtactt atgctatatc 20

<210> 1689
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1689
acatgcattc gaatatttaa 20

<210> 1690
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1690
cacacacatt taacaaatct 20

<210> 1691
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1691
ttctttcctc aagaggatga 20

<210> 1692
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1692
tactagattt ctttcctcaa 20

<210> 1693
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1693
aaaaacttat ttccatacct 20

<210> 1694
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1694
gtgctaagat tctttcaaatt 20

<210> 1695
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1695
aaataattct taaataagtt 20

<210> 1696
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1696
gtggtgaaca atcacgaaaa 20

<210> 1697
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1697
caatttgat cttcaaaaatt 20

<210> 1698
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1698
gtcaaagaac taatttgact 20

<210> 1699
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1699
catcaaagtc aaagaactaa 20

<210> 1700
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1700
tcccaaagcc aaaaaaaaaa 20

<210> 1701
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1701
tctgagggtgg catacgttaa 20

<210> 1702
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1702
aataaaatac aggtaaatac 20

<210> 1703
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1703
tgcagcttta cattcaaagg 20

<210> 1704
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1704
aagtgtatgt gtttcctatg 20

<210> 1705
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1705
aaacctccta aaaacttatt 20

<210> 1706
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1706
ttcaaataaa atacttctga 20

<210> 1707
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1707
ccatgtcatg ctccgtgaga 20

<210> 1708
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1708
aagcacaatt aaattctaga 20

<210> 1709
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1709
atcttacttc cttcaggggt 20

<210> 1710
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1710
taaagctatt tatggaagtg 20

<210> 1711
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1711
ttttcaacaa ataatactag 20

<210> 1712
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1712
ttcaaaggcc ttccacacac 20

<210> 1713
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1713
catgtccttt taaaacaaaa 20

<210> 1714
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1714
caggcacgag gagcgtggtc

20

<210> 1715
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1715
agactgtgcg gtagcaagtt

20

<210> 1716
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1716
ttgaacaatc acgaaaatag

20

<210> 1717
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1717
acctaccaag gaagggctaa

20

<210> 1718
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1718
aaattctaga gaagctacct

20

<210> 1719
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1719
ttcaaacatc ttacttcctt 20

<210> 1720
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1720
ccataagctt caaacatctt 20

<210> 1721
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1721
aaatatataa atattttacct 20

<210> 1722
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1722
aacaaataat actagatttc 20

<210> 1723
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1723
aattccacct atatttttaaa 20

<210> 1724
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1724
agaataaaaat acaggtaaataat 20

<210> 1725
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1725
aacaaacaca tacaagtgtt 20

<210> 1726
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1726
gctaaatatt ttatttccca 20

<210> 1727
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1727
ggaagggcta aatattttat 20

<210> 1728
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1728
gaagctacct accaaggaag 20

<210> 1729
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1729
aatatataaa tatttacctt 20

<210> 1730
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1730
ttcctcaaga ggatgataaa 20

<210> 1731
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1731
atactagatt tctttcctca 20

<210> 1732
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1732
aggcacgagg agcgtggtca 20

<210> 1733
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1733
cgcacactcg gcagcagcca 20

<210> 1734
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1734
cagcgcacac tcggcagcag 20

<210> 1735
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1735
cttcagtgtt actatacaca 20

<210> 1736
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1736
ttaatgtaca tcaaagtcaa 20

<210> 1737
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1737
tacctaccaa ggaagggcta 20

<210> 1738
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1738
aagcttcaaa catcttactt 20

<210> 1739
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1739
tgaggtggca tacgttaaag 20

<210> 1740
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1740
acaaataata ctagatttct 20

<210> 1741
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1741
ttctgagata tttcctaaga 20

<210> 1742
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1742
agcgcgggct gcttttgcac 20

<210> 1743
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1743
gcagcgcggg ctgcttttgc 20

<210> 1744
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1744
gtcacagatg cctgactggc 20

<210> 1745
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1745
atgctccgtg agagaaacaa 20

<210> 1746
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1746
tcatgctccg tgagagaaac 20

<210> 1747
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1747
tgtaagatta cctaaattgc 20

<210> 1748
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1748
atgtaagatt acctaaattg 20

<210> 1749
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1749
catttattta taaaaatata 20

<210> 1750
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1750
gaggatgata aatatgggta 20

<210> 1751
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1751
aatactagat ttctttcctc 20

<210> 1752
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1752
aaataaaaata cttctgagat 20

<210> 1753
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1753
tgctggtggg aagcagccgt 20

<210> 1754
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1754
gcacactcgg cagcagccac 20

<210> 1755
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1755
cacacttcac gccatccatg 20

<210> 1756
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1756
ccgtgagaga aacaaatctg 20

<210> 1757
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1757
gcacaattaa attctagaga 20

<210> 1758
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1758
aaagcacaat taaattctag 20

<210> 1759
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1759
tattttatgga agtgtatgtg

20

<210> 1760
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1760
actagatttc tttcctcaag

20

<210> 1761
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1761
aagattcttt caaatatact

20

<210> 1762
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1762
caattaaatt ctagagaagc

20

<210> 1763
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1763
gcagctttac attcaaaggc

20

<210> 1764
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1764
aaacctaaca gcttatgcag 20

<210> 1765
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1765
tgctccgtga gagaaacaaa 20

<210> 1766
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1766
agtcaaagaa ctaatttgac 20

<210> 1767
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1767
tcaaacatct tacttccttc 20

<210> 1768
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1768
ttatggaagt gtatgtgttt 20

<210> 1769
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1769
aaagctatatt atggaagtgt 20

<210> 1770
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1770
gagcgtggtc agcagcaaga 20

<210> 1771
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1771
gcaggcacga ggagcgtggt 20

<210> 1772
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1772
tgaacaatca cgaaaataga 20

<210> 1773
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1773
tcacaatttg gatcttcaaa 20

<210> 1774
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1774
tacacacaca tttaacaaat 20

<210> 1775
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1775
taaaaatata taaatattta 20

<210> 1776
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1776
gcctgactgg cagttgcagg 20

<210> 1777
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1777
agccgggatc agcgtggatt 20

<210> 1778
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1778
caaaaattac atgtacttat 20

<210> 1779
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1779
tctttcctca agaggatgat 20

<210> 1780
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1780
ctagatttct ttcctcaaga 20

<210> 1781
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1781
atattttaaa gttgacatgt 20

<210> 1782
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1782
tctttcacaa cttcttctct 20

<210> 1783
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1783
actatacaca cacatttaac 20

<210> 1784
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1784
tctgagatat ttcctaagaa 20

<210> 1785
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1785
tgtgtgttga acaatcacga 20

<210> 1786
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1786
agcacaatta aattctagag 20

<210> 1787
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1787
aaaaatatat aaatatttac 20

<210> 1788
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1788
caacaaataa tactagattt 20

<210> 1789
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1789
tcaacaaata atactagatt 20

<210> 1790
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1790
ttcaacaaat aatactagat 20

<210> 1791
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1791
attccaccta tatttttaaag 20

<210> 1792
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1792
gaaggctgac acctcagccc 20

<210> 1793
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1793
tcagcgtgga tttaaccatt 20

<210> 1794
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1794
atcagcgtgg atttaaccat 20

<210> 1795
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1795
tcctcaagag gatgataaat 20

<210> 1796
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1796
gccgggatca gcgtggattt 20

<210> 1797
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1797
aaaatatata aatatttacc 20

<210> 1798
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1798
aataaaatac ttctgagata 20

<210> 1799
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1799
taaaatacag gtaaatactg 20

<210> 1800
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1800
ggctgctttt gcactcactg 20

<210> 1801
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1801
cagcgcgggc tgcttttgca 20

<210> 1802
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1802
agagaagcta cctaccaagg 20

<210> 1803
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1803
taagattctt tcaaataac 20

<210> 1804
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1804
cagtgttgag ggcagtccac 20

<210> 1805
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1805
cctgagactg tgcggtagca 20

<210> 1806
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1806
cattctcttt cacaacttct 20

<210> 1807
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1807
cagcgtggat ttaaccattt 20

<210> 1808
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1808
aggaagggt aaatatttta 20

<210> 1809
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1809
aattaaattc tagagaagct 20

<210> 1810
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1810
aaaaaagcac aattaaattc 20

<210> 1811
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1811
aggatgataa atatgggtag 20

<210> 1812
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1812
gtgggaagca gccgtgaccc 20

<210> 1813
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1813
ttgctggtgg gaagcagccg 20

<210> 1814
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1814
tctttgctgg tgggaagcag 20

<210> 1815
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1815
ataaatattt accttcatac 20

<210> 1816
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1816
accattttca acaaataata 20

<210> 1817
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1817
agcacttatg tttaaataag 20

<210> 1818
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1818
caaacctcct aaaaacttat 20

<210> 1819
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1819
aaaataacttc tgagatattt 20

<210> 1820
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1820
gtaaatactg aaataattct 20

<210> 1821
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1821
cctgtcacag atgcctgact 20

<210> 1822
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1822
aagctattta tggaagtgtgta 20

<210> 1823
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1823
ccttcataca cacacaaacc 20

<210> 1824
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1824
cccaaagcca aaaaaaaaaa 20

<210> 1825
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1825
caaacatctt acttccttca 20

<210> 1826
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1826
cttcaaacat cttacttcct 20

<210> 1827
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1827
taagcttcaa acatcttact 20

<210> 1828
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1828
cacttatggt taaataaggt 20

<210> 1829
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1829
ataaaaatact tctgagatat

20

<210> 1830
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1830
tgaaataatt cttaaataag

20

<210> 1831
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1831
aagaataaaa tacaggtaaa

20

<210> 1832
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1832
cttggtcttt tttattgaac

20

<210> 1833
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1833
gctccgtgag agaaacaaat

20

<210> 1834
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1834
agcttcaaac atcttacttc 20

<210> 1835
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1835
taaataactga aataattctt 20

<210> 1836
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1836
ggcacgagga gcgtggtcag 20

<210> 1837
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1837
gctgcttttg cactcactgc 20

<210> 1838
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1838
ccccctgtca cagatgcctg 20

<210> 1839
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1839
acacacattt aacaaatcta 20

<210> 1840
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1840
ctgggtggtt tattttgact 20

<210> 1841
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1841
ctgtcacaga tgcctgactg 20

<210> 1842
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1842
tggttggttt attttgactt 20

<210> 1843
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1843
atgataaata tgggtaggga 20

<210> 1844
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1844
ttccacctat attttaagt 20

<210> 1845
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1845
acacttcatg ccatccatgc 20

<210> 1846
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1846
tcacagatgc ctgactggca 20

<210> 1847
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1847
atacacacac atttaacaaa 20

<210> 1848
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1848
ctatacacac acatttaaca 20

<210> 1849
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1849
catcttactt ccttcagggg 20

<210> 1850
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1850
ctcctaaaaa cttattttca 20

<210> 1851
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1851
ttcatacaca cacaaaccac 20

<210> 1852
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1852
cattttcaac aaataatact 20

<210> 1853
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1853
aaatccagag tgactcctat 20

<210> 1854
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1854
agcgtggtca gcagcaagac 20

<210> 1855
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1855
ctgagactgt gcggtagcaa 20

<210> 1856
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1856
gcttcaaaca tcttacttcc 20

<210> 1857
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1857
gaggtggcat acgttaaagc 20

<210> 1858
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1858
cctcaagagg atgataaata 20

<210> 1859
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1859
ctcctataat tatggataat 20

<210> 1860
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1860
aatccagagt gactcctata 20

<210> 1861
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1861
ccctgtcaca gatgcctgac 20

<210> 1862
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1862
gcattctctt tcacaaacttc 20

<210> 1863
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1863
aatttgatc ttcaaaaatt 20

<210> 1864
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1864
cacaatttgg atcttcaaaa 20

<210> 1865
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1865
aaattacatg tacttatgct 20

<210> 1866
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1866
tcttcaaaaa ttacatgtac 20

<210> 1867
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1867
tcctaaaaac ttattttcat 20

<210> 1868
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1868
taaaatactt ctgagatatt 20

<210> 1869
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1869
agcgcacact cggcagcagc 20

<210> 1870
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1870
tatggaagtg tatgtgtttc 20

<210> 1871
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1871
gcacttatgt ttaaataagg 20

<210> 1872
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1872
gtgcaggcac gaggagcgtg 20

<210> 1873
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1873
ccccgggcca cacttcatgc 20

<210> 1874
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1874
tgccctgactg gcagttgcag

20

<210> 1875
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1875
ctcttttcaca acttcttctc

20

<210> 1876
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1876
catttaacaa atctacatgc

20

<210> 1877
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1877
agaagctacc taccaaggaa

20

<210> 1878
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1878
ataaatatgg gtaggaaga

20

<210> 1879
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1879
atttggatct tcaaaaatta 20

<210> 1880
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1880
tatacacaca catttaacaa 20

<210> 1881
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1881
attaaattct agagaagcta 20

<210> 1882
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1882
cttcatacac acacaaacca 20

<210> 1883
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1883
agaggatgat aaatatgggt 20

<210> 1884
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1884
gactcctata attatggata 20

<210> 1885
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1885
gaaatccaga gtgactccta 20

<210> 1886
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1886
tctctttcac aacttcttct 20

<210> 1887
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1887
ccattttcaa caaataatac 20

<210> 1888
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1888
cagcattctc tttcacaact 20

<210> 1889
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1889
ttcagtgtta ctatacacac 20

<210> 1890
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1890
ggtaaataact gaaataattc 20

<210> 1891
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1891
aaatacaggt aaatactgaa 20

<210> 1892
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1892
aaaatacagg taaatactga 20

<210> 1893
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1893
gatgccatgt catgctcgt 20

<210> 1894
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1894
agcattctct ttcacaactt 20

<210> 1895
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1895
cacattttaac aaatctacat 20

<210> 1896
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1896
atttataaaa atatataaat 20

<210> 1897
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1897
tgataaatat gggtaggga 20

<210> 1898
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1898
tatatttttaa agttgacatg 20

<210> 1899
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1899
tgtcacagat gcctgactgg 20

<210> 1900
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1900
tcagtgttac tatacacaca 20

<210> 1901
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1901
tccacctata ttttaaagtt 20

<210> 1902
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1902
ctccgtgaga gaaacaaatc 20

<210> 1903
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1903
ctgggtgggaa gcagccgtga 20

<210> 1904
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1904
tttgctggtg ggaagcagcc 20

<210> 1905
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1905
ctttgctggt gggaagcagc 20

<210> 1906
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1906
atgccatgtc atgctccgtg 20

<210> 1907
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1907
gatcagcgtg gatttaacca 20

<210> 1908
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1908
gctatttatg gaagtgtatg 20

<210> 1909
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1909
actcctataa ttatggataa 20

<210> 1910
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1910
atcttcaaaa attacatgta 20

<210> 1911
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1911
aagaggatga taaatatggg 20

<210> 1912
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1912
caggtaaata ctgaaataat 20

<210> 1913
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1913
gctgggtggga agcagccgtg 20

<210> 1914
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1914
cagatgccat gtcatgctcc 20

<210> 1915
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1915
aaaaaaagca caattaaatt 20

<210> 1916
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1916
aggtaaatac tgaaataatt 20

<210> 1917
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1917
cgtggattta accatttcct 20

<210> 1918
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1918
cgggatcagc gtggatttaa 20

<210> 1919
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1919
ctatatatttta aagttgacat
20

<210> 1920
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1920
tttggatctt caaaaattac
20

<210> 1921
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1921
agctatttat ggaagtgtat
20

<210> 1922
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1922
gataaatatg ggtagggaag
20

<210> 1923
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1923
cacacattta acaaattctac
20

<210> 1924
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1924
ggtgggaagc agccgtgacc 20

<210> 1925
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1925
agatgccatg tcatgctccg 20

<210> 1926
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1926
aaaattacat gtacttatgc 20

<210> 1927
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1927
acatttaaca aatctacatg 20

<210> 1928
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1928
aaaaaaaaaa agcacaatta 20

<210> 1929
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1929
cataagcttc aaacatctta 20

<210> 1930
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1930
ctatztatgg aagtgtatgt 20

<210> 1931
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1931
cctaaaaact tattttcata 20

<210> 1932
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1932
gcagcattct ctttcacaac 20

<210> 1933
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1933
acacatttaa caaatctaca 20

<210> 1934
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1934
ttggatcttc aaaaattaca 20

<210> 1935
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1935
aaaaaaaaaa aagcacaatt 20

<210> 1936
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1936
caagaggatg ataaatatgg 20

<210> 1937
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1937
gtggtcagca gcaagacgct 20

<210> 1938
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1938
tgcaggcacg aggagcgtgg 20

<210> 1939
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1939
aacaaaacct aacagcttat 20

<210> 1940
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1940
ccaaagccaa aaaaaaaaaa 20

<210> 1941
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1941
aatacaggta aatactgaaa 20

<210> 1942
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1942
gcgtgggtcag cagcaagacg 20

<210> 1943
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1943
cagatgcctg actggcagtt 20

<210> 1944
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1944
cccctgtcac agatgcctga 20

<210> 1945
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1945
agcgtggatt taaccatttc 20

<210> 1946
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1946
aaaaattaca tgtacttatg 20

<210> 1947
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1947
aaaaaaaaagc acaattaaat 20

<210> 1948
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1948
aaacaaaacc taacagctta 20

<210> 1949
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1949
agatgcctga ctggcagttg 20

<210> 1950
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1950
cgtggtcagc agcaagacgc 20

<210> 1951
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1951
cagtgttact atacacacac 20

<210> 1952
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1952
aaaaaaaaaa aaagcacaat 20

<210> 1953
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1953
gcgtggattt aaccatttcc 20

<210> 1954
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1954
acaggtaaact actgaaataa

20

<210> 1955
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1955
atgcctgact ggcagttgca

20

<210> 1956
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1956
ggatcagcgt ggatttaacc

20

<210> 1957
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1957
acagatgcct gactggcagt

20

<210> 1958
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1958
aaaaaaaaaa gcacaattaa

20

<210> 1959
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1959
cctatatatttt aaagttgaca 20

<210> 1960
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1960
ttaaattcta gagaagctac 20

<210> 1961
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1961
aaacatctta cttccttcag 20

<210> 1962
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1962
gatgcctgac tggcagttgc 20

<210> 1963
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1963
tggatcttca aaaattacat 20

<210> 1964
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1964
ctaaaaactt attttcatatc 20

<210> 1965
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1965
gagaagctac ctaccaagga 20

<210> 1966
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1966
gtgtgttgaa caatcacgaa 20

<210> 1967
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1967
gatcttcaaa aattacatgt 20

<210> 1968
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1968
tacaggtaaa tactgaaata 20

<210> 1969
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1969
tcaagaataa aatacaggta 20

<210> 1970
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1970
tgtgttgaac aatcacgaaa 20

<210> 1971
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1971
acatcttact tccttcaggg 20

<210> 1972
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1972
ccaacttcaa gaataaaata 20

<210> 1973
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1973
aaaaaaaaaa aaaagcacaa 20

<210> 1974
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1974
aaaaaaaaag cacaattaaa 20

<210> 1975
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1975
ttcaagaata aaatacaggt 20

<210> 1976
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1976
aacttcaaga ataaaataca 20

<210> 1977
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1977
cacagatgcc tgactggcag 20

<210> 1978
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1978
gggatcagcg tggatttaac 20

<210> 1979
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1979
aaaaaaaaaa aaaaagcaca 20

<210> 1980
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1980
caacttcaag aataaaatac 20

<210> 1981
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1981
ggatcttcaa aaattacatg 20

<210> 1982
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1982
tcaagaggat gataaatatg 20

<210> 1983
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1983
caagaataaa atacaggtaa 20

<210> 1984
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1984
acctatatattt taaagttgac 20

<210> 1985
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1985
acttcaagaa taaaatacag 20

<210> 1986
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1986
ctcaagagga tgataaatat 20

<210> 1987
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1987
tggtgggaag cagccgtgac 20

<210> 1988
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1988
caaagccaaa aaaaaaaaaa 20

<210> 1989
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1989
aacatccttac ttccttcagg 20

<210> 1990
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1990
cttcaagaat aaaatacagg 20

<210> 1991
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1991
ccaaaaaaaa aaaaaaagca 20

<210> 1992
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1992
caaaaaaaaa aaaaaagcac 20

<210> 1993
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1993
atacaggtaa atactgaaat 20

<210> 1994
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1994
aaagccaaaa aaaaaaaaaa 20

<210> 1995
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1995
gccaaaaaaa aaaaaaaagc 20

<210> 1996
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1996
ataagcttca aacatcttac 20

<210> 1997
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1997
ccacctatat tttaaagttg 20

<210> 1998
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1998
cacctatatt ttaaagttga 20

<210> 1999
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 1999
aagccaaaaa aaaaaaaaaa

20

<210> 2000
<211> 20
<212> DNA
<213> artificial

<220>
<223> human ESM-1 antisense

<400> 2000
agccaaaaaa aaaaaaaaag

20

<210> 2001
<211> 19
<212> DNA
<213> Artificial

<220>
<223> human ESM-1 PCR fowrd primer

<400> 2001
ctgcttccca ccagcaaag

19

<210> 2002
<211> 22
<212> DNA
<213> Artificial

<220>
<223> human ESM PCR reverse primer

<400> 2002
gcaagacgct cttcatgttt cc

22

<210> 2003
<211> 21
<212> DNA
<213> Artificial

<220>
<223> human ESM PCR probe

<400> 2003
cgactggaga gccgagccgg a

21

<210> 2004
<211> 20
<212> DNA
<213> Artificial

<220>
<223> cyclophilin PCR forward primer

<400> 2004
cccaccgtgt tcttcgacat

20

<210> 2005
<211> 22
<212> DNA
<213> Artificial

<220>
<223> cyclophilin PCR reverse primer

<400> 2005
tttctgctgt ctttgggacc tt

22

<210> 2006
<211> 24
<212> DNA
<213> Artificial

<220>
<223> cyclophilin PCR probe

<400> 2006
cgcgtctcct ttgagctgtt tgca

24

<210> 2007
<211> 184
<212> PRT
<213> Homo sapiens

<400> 2007

Met Lys Ser Val Leu Leu Thr Thr Leu Leu Val Pro Ala His Leu
1 5 10 15

Val Ala Ala Trp Ser Asn Asn Tyr Ala Val Asp Cys Pro Gln His Cys
20 25 30

Asp Ser Ser Glu Cys Lys Ser Ser Pro Arg Cys Lys Arg Thr Val Leu
35 40 45

Asp Asp Cys Gly Cys Cys Arg Val Cys Ala Ala Gly Arg Gly Glu Thr
50 55 60

Cys Tyr Arg Thr Val Ser Gly Met Asp Gly Met Lys Cys Gly Pro Gly
65 70 75 80

Leu Arg Cys Gln Pro Ser Asn Gly Glu Asp Pro Phe Gly Glu Glu Phe
85 90 95

Gly Ile Cys Lys Asp Cys Pro Tyr Gly Thr Phe Gly Met Asp Cys Arg

	100		105		110
Glu Thr Cys Asn Cys Gln Ser Gly Ile Cys Asp Arg Gly Thr Gly Lys					
115		120		125	
Cys Leu Lys Phe Pro Phe Phe Gln Tyr Ser Val Thr Lys Ser Ser Asn					
130		135		140	
Arg Phe Val Ser Leu Thr Glu His Asp Met Ala Ser Gly Asp Gly Asn					
145		150		155	160
Ile Val Arg Glu Glu Val Val Lys Glu Asn Ala Ala Gly Ser Pro Val					
	165		170		175
Met Arg Lys Trp Leu Asn Pro Arg					
180					

<210> 2008
 <211> 2017
 <212> DNA
 <213> Homo sapiens

<400> 2008

ggtcacggct gcttcccacc agcaaagacc acgactggag agccgagccg gaggcagctg	60
ggaacatga agagcgtctt gctgctgacc acgctcctcg tgctgcaca cctgggtggc	120
gcctggagca ataattatgc ggtggactgc cctcaacact gtgacagcag tgagtgcaaa	180
agcagcccg cctgcaagag gacagtgtc gacgactgtg gctgctgccg agtgtgcgct	240
gcagggcggg gagaaacttg ctaccgcaca gtctcaggca tggatggcat gaagtgtggc	300
ccggggctga ggtgtcagcc ttctaattggg gaggatcctt ttggtgaaga gtttggatc	360
tgcaaagact gtcctacgg caccttcggg atggattgca gagagacctg caactgccag	420
tcaggcatct gtgacagggg gacgggaaaa tgcctgaaat tccccttctt ccaatattca	480
gtaaccaagt cttccaacag atttgtttct ctcacggagc atgacatggc atctggagat	540
ggcaatattg tgagagaaga agttgtgaaa gagaatgctg ccgggtctcc cgtaatgagg	600
aatgggttaa atccacgctg atcccggctg tgatttctga gagaaggctc tattttcgtg	660
attgttcaac acacagccaa catttttagga actttctaga tatagcataa gtacatgtaa	720
tttttgaaga tccaaattgt gatgcatggg ggatccagaa aacaaaaagt aggatactta	780
caatccataa catccatatg actgaacact tgtatgtgtt tgttaaataat tcgaatgcat	840
gtagatttgt taaatgtgtg tgtatagtaa cactgaagaa ctaaaaatgc aatttaggta	900
atcttacatg gagacaggtc aaccaaagag ggagctaggc aaagctgaag accgcagtga	960

gtcaaattag ttctttgact ttgatgtaca ttaatgttgg gatatggaat gaagacttaa	1020
gagcaggaga, agatggggag ggggtgggag tgggaaataa aatatttagc ccttccttgg	1080
taggtagctt ctctagaatt taattgtgct tttttttttt ttttggcttt gggaaaagtc	1140
aaaataaaac aaccagaaaa cccctgaagg aagtaagatg tttgaagctt atggaaattt	1200
gagtaacaaa, cagctttgaa ctgagagcaa tttcaaaagg ctgctgatgt agttcccggg	1260
ttacctgtat ctgaaggacg gttctggggc ataggaaaca catacacttc cataaatagc	1320
tttaacgtat gccacctcag agataaatct aagaagtatt ttaccactg gtggtttgtg	1380
tgtgtatgaa ggtaaattt tatatatatt tataaataaa tgtgttagtg caagtcattt	1440
tcctaccca tatttatcat cctcttgagg aaagaaatct agtattattt gttgaaaatg	1500
gttagaataa aaacctatga ctctataagg ttttcaaaca tctgaggcat gataaattta	1560
ttatccataa ttataggagt cactctggat ttcaaaaaat gtcaaaaaat gagcaacaga	1620
gggaccttat ttaaacataa gtgctgtgac ttcggtgaat tttcaattta aggtatgaaa	1680
ataagttttt aggaggtttg taaaagaaga atcaattttc agcagaaaac atgtcaactt	1740
taaaatatag gtggaattag gagtatattt gaaagaatct tagcaciaac aggactgttg	1800
tactagatgt tcttaggaaa tatctcagaa gtattttatt tgaagtgaag aacttattta	1860
agaattattt cagtatttac ctgtatttta ttcttgaagt tggccaacag agttgtgaat	1920
gtgtgtggaa ggcctttgaa tgtaaagctg cataagctgt taggttttgt tttaaaagga	1980
catgtttatt attgttcaat aaaaaagaac aagatac	2017